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(54) Title: BENZAMIDES AND RELATED INHIBITORS OF FACTOR XA

(57) Abstract: Novel benzamide compounds including their pharmaceutically acceptable isomers, salts, hydrates, solvates and pro-drug derivatives having activity against mammalian factor Xa are described. Compositions containing such compounds are also described. The compounds and compositions are useful *in vitro* or *in vivo* for preventing or treating coagulation disorders.

BENZAMIDES AND RELATED INHIBITORS OF FACTOR Xa

Field of the Invention

This invention relates to novel compounds which are potent and highly selective inhibitors of isolated factor Xa or when assembled in the prothrombinase complex. These compounds show selectivity for factor Xa versus other proteases of the coagulation (e.g. thrombin, fVIIa, fIXa) or the fibrinolytic cascades (e.g. plasminogen activators, plasmin). In another aspect, the present invention relates to novel monoamidino-containing compounds, their pharmaceutically acceptable salts, and pharmaceutically acceptable compositions thereof which are useful as potent and specific inhibitors of blood coagulation in mammals. In yet another aspect, the invention relates to methods for using these inhibitors as therapeutic agents for disease states in mammals characterized by coagulation disorders.

15 Background of the Invention

Hemostasis, the control of bleeding, occurs by surgical means, or by the physiological properties of vasoconstriction and coagulation. This invention is particularly concerned with blood coagulation and ways in which it assists in maintaining the integrity of mammalian circulation after injury, inflammation, disease, congenital defect, dysfunction or other disruption. Although platelets and blood coagulation are both involved in thrombus formation, certain components of the coagulation cascade are primarily responsible for the amplification or acceleration of the processes involved in platelet aggregation and fibrin deposition.

Thrombin is a key enzyme in the coagulation cascade as well as in hemostasis. Thrombin plays a central role in thrombosis through its ability to catalyze the conversion of fibrinogen into fibrin and through its potent platelet activation activity. Direct or indirect inhibition of thrombin activity has been the focus of a variety of recent anticoagulant strategies as reviewed by Claeson, G., "Synthetic Peptides and Peptidomimetics as Substrates and Inhibitors of Thrombin and Other Proteases in the Blood Coagulation System", *Blood Coag. Fibrinol.* 5, 411-436 (1994). Several classes of anticoagulants currently used in the clinic directly or indirectly affect

thrombin (i.e. heparins, low-molecular weight heparins, heparin-like compounds and coumarins).

A prothrombinase complex, including Factor Xa (a serine protease, the activated form of its Factor X precursor and a member of the calcium ion binding, 5 gamma carboxyglutamyl (Gla)-containing, vitamin K dependent, blood coagulation glycoprotein family), converts the zymogen prothrombin into the active procoagulant thrombin. Unlike thrombin, which acts on a variety of protein substrates as well as at a specific receptor, factor Xa appears to have a single physiologic substrate, namely prothrombin. Since one molecule of factor Xa may be able to generate up to 138 10 molecules of thrombin (Elodi et al., *Thromb. Res.* 15, 617-619 (1979)), direct inhibition of factor Xa as a way of indirectly inhibiting the formation of thrombin may be an efficient anticoagulant strategy. Therefore, it has been suggested that compounds which selectively inhibit factor Xa may be useful as *in vitro* diagnostic agents, or for therapeutic administration in certain thrombotic disorders, see e.g., WO 15 94/13693.

Polypeptides derived from hematophagous organisms have been reported which are highly potent and specific inhibitors of factor Xa. United States Patent 4,588,587 describes anticoagulant activity in the saliva of the Mexican leech, *Haementeria officinalis*. A principal component of this saliva was shown to be the 20 polypeptide factor Xa inhibitor, antistasin (ATS), by Nutt, E. et al., "The Amino Acid Sequence of Antistasin, a Potent Inhibitor of Factor Xa Reveals a Repeated Internal Structure", *J. Biol. Chem.*, 263, 10162-10167 (1988). Another potent and highly specific inhibitor of Factor Xa, called tick anticoagulant peptide (TAP), has been isolated from the whole body extract of the soft tick *Ornithodoros moubata*, as 25 reported by Waxman, L., et al., "Tick Anticoagulant Peptide (TAP) is a Novel Inhibitor of Blood Coagulation Factor Xa" *Science*, 248, 593-596 (1990).

Factor Xa inhibitory compounds which are not large polypeptide-type inhibitors have also been reported including: Tidwell, R.R. et al., "Strategies for Anticoagulation With Synthetic Protease Inhibitors. Xa Inhibitors Versus Thrombin 30 Inhibitors", *Thromb. Res.*, 19, 339-349 (1980); Turner, A.D. et al., "p-Amidino Esters as Irreversible Inhibitors of Factor IXa and Xa and Thrombin", *Biochemistry*, 25,

4929-4935 (1986); Hitomi, Y. *et al.*, "Inhibitory Effect of New Synthetic Protease Inhibitor (FUT-175) on the Coagulation System", *Haemostasis*, 15, 164-168 (1985); Sturzebecher, J. *et al.*, "Synthetic Inhibitors of Bovine Factor Xa and Thrombin.

Comparison of Their Anticoagulant Efficiency", *Thromb. Res.*, 54, 245-252 (1989);

5 Kam, C.M. *et al.*, "Mechanism Based Isocoumarin Inhibitors for Trypsin and Blood Coagulation Serine Proteases: New Anticoagulants", *Biochemistry*, 27, 2547-2557 (1988); Hauptmann, J. *et al.*, "Comparison of the Anticoagulant and Antithrombotic Effects of Synthetic Thrombin and Factor Xa Inhibitors", *Thromb. Haemost.*, 63, 220-223 (1990); and the like.

10 Others have reported Factor Xa inhibitors which are small molecule organic compounds, such as nitrogen containing heterocyclic compounds which have amidino substituent groups, wherein two functional groups of the compounds can bind to Factor Xa at two of its active sites. For example, WO 98/28269 describes pyrazole compounds having a terminal C(=NH)-NH₂ group; WO 97/21437 describes benzimidazole compounds substituted by a basic radical which are connected to a naphthyl group via a straight or branched chain alkylene, -C(=O) or -S(=O)₂ bridging group; WO 99/10316 describes compounds having a 4-phenyl-N-alkylamidino-piperidine and 4-phenoxy-N-alkylamidino-piperidine group connected to a 3-amidinophenyl group via a carboxamidealkyleneamino bridge; and EP 798295 describes compounds having a 4-phenoxy-N-alkylamidino-piperidine group connected to an amidinonaphthyl group via a substituted or unsubstituted sulfonamide or carboxamide bridging group.

15 There exists a need for effective therapeutic agents for the regulation of hemostasis, and for the prevention and treatment of thrombus formation and other pathological processes in the vasculature induced by thrombin such as restenosis and inflammation. In particular, there continues to be a need for compounds which selectively inhibit factor Xa or its precursors. Compounds that have different combinations of bridging groups and functional groups than compounds previously discovered are needed, particularly compounds which selectively or preferentially bind to Factor Xa. Compounds with a higher degree of binding to Factor Xa than to

thrombin are desired, especially those compounds having good bioavailability and/or solubility.

Summary of the Invention

As discussed above, a number of non-peptide, specific, factor Xa inhibitors have been described either in the scientific or patent literature (Zhu and Scarborough, Ann. Rep. Med. Chem. 35: 83-102 (2000)). Most of these compounds rely on the interaction of P1 and P4 elements of the inhibitor compounds with the S1 and S4 sub-sites on the factor Xa enzyme. In general, it has been described that P1 elements utilize a highly charged benzamidine functionality in order to interact with the S1 pocket of the factor Xa enzyme. Furthermore, substitution on the benzamidine nitrogens either by alkylation or cyclization (cyclic amidines) of these previously described inhibitors is detrimental to their interaction with the enzyme at the S1 pocket. In the present application, a novel series of inhibitors of factor Xa which do not utilize a S1-interacting benzamidine but utilize a neutral P1 species are described. In addition the compounds also utilize a substituted benzamidine or a cyclic amidine as a P4 element which can each interact with the S4 sub-site of factor Xa enzyme. Surprisingly, the inhibitors of this invention with modified amidine elements are not only of high potency *in vitro*, but also have excellent pharmacological and pharmaceutical properties *in vivo*. These are results that would not have been predicted for such structures.

Accordingly, the present invention relates to novel compounds which inhibit factor Xa, their pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives, and pharmaceutically acceptable compositions thereof which have particular biological properties and are useful as potent and specific inhibitors of blood coagulation in mammals. In another aspect, the invention relates to methods of using these inhibitors as diagnostic reagents or as therapeutic agents for disease states in mammals characterized by undesired thrombosis or which have coagulation disorders, such as in the treatment or prevention of any thrombotically mediated acute coronary or cerebrovascular syndrome, any thrombotic syndrome occurring in the venous system, any coagulopathy, and any thrombotic complications associated with

extracorporeal circulation or instrumentation, and for the inhibition of coagulation in biological samples.

In certain embodiments, this invention relates to novel compounds which are potent and highly selective inhibitors of isolated factor Xa when assembled in the 5 prothrombinase complex. These compounds show selectivity for factor Xa versus other proteases of the coagulation cascade (e.g. thrombin, etc.) or the fibrinolytic cascade, and are useful as diagnostic reagents as well as antithrombotic agents.

In one embodiment, the present invention relates to a compound according to 10 the formula (I):



where:

A is selected from:

15 (a) C_1-C_6 -alkyl;

(b) C_3-C_8 -cycloalkyl;

(c) $-N(R^1, R^2)$, $N(R^1, R^2)-C(=NR^3)-$, $N(R^1, R^2)-C(=NR^3)-N(R^4)-$, $R^1-C(=NR^3)-$, $R^1-C(=NR^3)-N(R^4)-$;

20 (d) phenyl, which is independently substituted with 0-2 R substituents;

(e) naphthyl, which is independently substituted with 0-2 R substituents;

25 and (f) a monocyclic or fused bicyclic heterocyclic ring system having from 5 to 10 ring atoms, wherein 1-4 ring atoms of the ring system are selected from N, O and S, and wherein the ring system may be substituted with 0-2 R substituents;

30

R is selected from:

H, halo, -CN, -CO₂R¹, -C(=O)-N(R¹, R²), -(CH₂)_m-CO₂R¹, -(CH₂)_m-C(=O)-N(R¹, R²), -NO₂, -SO₂N(R¹, R²), -SO₂R¹, -(CH₂)_mNR¹R², -(CH₂)_m-C(=NR³)-R¹, -(CH₂)_m-C(=NR³)-N(R¹, R²), -(CH₂)_m-N(R⁴)-C(=NR³)-N(R¹, R²), -(CH₂)_mNR¹- group appended to a 3 to 6 membered heterocyclic ring
5 containing from 1-4 heteroatoms selected from N, O and S, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CF₃, -OR², and a 5-6 membered heterocyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic system may be independently replaced with a member selected
10 from the group consisting of halo, -C₁₋₄alkyl, -C₁₋₄alkyl-CN, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂;

m is an integer of 0-2;

15 R¹, R², R³ and R⁴ are independently selected from the group consisting of:
H, -OR⁵, -N(-R⁵, -R⁶), -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl
20 moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, and -NO₂; or

25 R¹ and R², or R² and R³ taken together can form a 3-8 membered cycloalkyl or a heterocyclic ring system, wherein the heterocyclic ring system may have from 3 to 10 ring atoms, with 1 to 2 rings being in the ring system and contain from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C₁-C₄-alkyl, -CN -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and
30 -NO₂;

R^5 and R^6 are independently selected from the group consisting of:

H, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, and -NO₂; or

10 R^5 and R^6 taken together can form a 3-8 membered cycloalkyl or a heterocyclic ring system, wherein the heterocyclic ring system may have from 3 to 10 ring atoms, with 1 to 2 rings being in the ring system and contain from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, $-C_1-C_4$ -alkyl, $-CN$ $-C_{1-4}$ alkyl, $-C_2$ -alkenyl, $-C_{2-6}$ alkynyl, $-C_{3-8}$ cycloalkyl, $-C_{0-4}$ alkyl C_{3-8} cycloalkyl and $-NO_2$;

Q is a member selected from the group consisting of:

20 a direct link, -CH₂-, -C(=O)-, -O-, -N(R⁷)-, -N(R⁷)CH₂-, -CH₂N(R⁷)-, -C(=NR⁷)-, -C(=O)-N(R⁷)-, -N(R⁷)-C(=O)-, -S-, -SO-, -SO₂-, -SO₂-N(R⁷)- and -N(R⁷)-SO₂-;

R^7 is selected from:

25 H, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, and -NO₂;

30 D is a direct link or is a member selected from the group consisting of:

(a) phenyl, which is independently substituted with 0-2 R^{1a} substituents;

(b) naphthyl, which is independently substituted with 0-2 R^{1a} substituents; and

(c) a monocyclic or fused bicyclic heterocyclic ring system having from 5 to 10 ring atoms, wherein 1-4 ring atoms of the ring system are selected from N, O and S, and wherein the ring system may be substituted from 0-2 R^{1a} substituents;

R^{1a} is selected from:

halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, -NO₂, -(CH₂)_nNR^{2a}R^{3a}, -(CH₂)_nCO₂R^{2a}, -(CH₂)_nCONR^{2a}R^{3a}, -SO₂NR^{2a}R^{3a}, -SO₂R^{2a}, -CF₃, -OR^{2a}, and a 5-6 membered aromatic heterocyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the aromatic heterocyclic system may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN and -NO₂;

R^{2a} and R^{3a} are independently selected from the group consisting of:

H, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN and -NO₂;

25

n is an integer of 0-2;

E is a direct link or a member selected from the group consisting of:

-C₁₋₂-alkyl-, -O-, -S-, -SO-, -SO₂-, -C₀₋₁-alkyl-C(=O), -C₀₋₁-alkyl-C(=O)-N(-R⁸)- C₀₋₁-alkyl-, -C₀₋₁-alkyl-N(-R⁸)-C(=O)-C₀₋₁-alkyl-, -N(-R⁸)-C(=O)-N(-R⁸)- and -C₀₋₁-alkyl-N(-R⁸)-;

R^8 is a member selected from the group consisting of:

H; $-C_{1-4}$ -alkyl; $-C_{0-4}$ -alkylaryl; $-C_{0-4}$ -alkyl-heteroaryl; $-C_{1-4}$ -alkyl-C(=O)-OH, $-C_{1-4}$ -alkyl-C(=O)-O- C_{1-4} -alkyl, and $-C_{1-4}$ -alkyl-C(=O)-N(- R^{2b} , - R^{3b});

5

R^{2b} and R^{3b} are each a member independently selected from the group consisting of:

H, $-C_{1-4}$ -alkyl, $-C_{0-4}$ -alkyl-aryl; $-C_{0-4}$ -alkyl-heterocyclic group, and R^{2b} and R^{3b} together with the N atom to which they are attached can form a 5-8 membered heterocyclic ring containing 1-4 heteroatoms selected from N, O and S, wherein the heterocyclic ring may be substituted with 0-2 R^{1c} groups;

10

R^{1c} is a member selected from the group consisting of:

Halo; $-C_{1-4}$ -alkyl; -CN, -NO₂; -C(=O)-N(- R^{2c} , - R^{3c}); -C(=O)-OR^{2c}; -(CH₂)_q-N(- R^{2c} , - R^{3c}); -SO₂-N(- R^{2c} , - R^{3c}); -SO₂R^{2c}; -CF₃ and -(CH₂)_q-OR^{2c};

15

R^{2c} and R^{3c} are each independently a member selected from the group consisting of:

H; $-C_{1-4}$ -alkyl and $-C_{1-4}$ -alkyl-aryl;

q is an integer of 0-2;

20

G is a member selected from the group consisting of:

(a) C_2 -alkenyl or C_{3-8} -cycloalkenyl, wherein the alkenyl and cycloalkenyl attachment points are the alkenyl carbon atoms and wherein the $-C_2$ -alkenyl or $-C_{3-8}$ -cycloalkenyl are substituted with 0-4 R^{1d} groups;

25

(b) a phenylene group wherein the ring carbon atoms of the phenylene group are substituted with 0-4 R^{1d} groups;

30

(c) a 3-8 membered a saturated, partially unsaturated or aromatic monocyclic- heterocyclic ring system containing 1-4 heteroatoms

selected from N, O and S, wherein 0-2 ring atoms of the heterocyclic ring may be substituted with 0-4 R^{1d} groups; and,

(d) an 8-10 membered fused heterocyclic bicyclic ring system, containing 1-4 heteroatoms selected from N, O and S, wherein 0-2 ring atoms of the fused bicyclic ring system may be substituted with 0-4 R^{1d} groups;

5

R^{1d} is a member selected from the group consisting of:

10

H, halo; C₁₋₆-alkyl, carbocyclic aryl, -CN; -NO₂; -(CH₂)₀₋₆-NR^{2d}R^{3d}; -SO₂NR^{2d}R^{3d}; -SO₂R^{2d}; -CF₃; -(CH₂)₀₋₆-OR^{2d}; -OH,

15

-OC₁₋₆alkyl, -O-(CH₂)₁₋₆OR^{2d}; -O-(CH₂)₁₋₆-C(=O)-O-R^{2d}; -O-(CH₂)₁₋₆-C(=O)-N(R^{2d},R^{3d}); -N(R^{5a})-(CH₂)₁₋₆-OR^{2d}; -N(R^{5a})-(CH₂)₁₋₆-N(R^{2d},R^{3d}); -C(=O)-N(R^{2d},R^{3d}); -N(R^{5a})-(CH₂)₁₋₆-C(=O)-N(R^{2d},R^{3d}); -N(-(CH₂)₁₋₆-OR^{2d})₂; -N(R^{5a})-(CH₂)₁₋₆-OR^{2d}; -N(R^{5a})-C(=O)-R^{2d}; -N(R^{5a})-SO₂-R^{2d}; -(CH₂)₀₋₆-C(=O)-O-R^{2d}; -(CH₂)₀₋₆-C(=O)-N(R^{2d},R^{3d}); -(CH₂)₀₋₆-C(=NR^{2d})-N(R^{3d},R^{4d}); -(CH₂)₀₋₆-N(R^{5a})C(=NR^{2d})-N(R^{3d},R^{4d}); a -(CH₂)₀₋₆-N(R^{3d})C₅₋₆ membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S, and a -(CH₂)₀₋₆-5-6 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

20

R^{5a}, R^{2d}, R^{3d} and R^{4d} are each independently a member selected from the group consisting of:

25

H, C₁₋₆-alkyl and C₁₋₆-alkylaryl, -CN; -NO₂; carbocyclic aryl, -CN; -NO₂; or

R^{2d} and R^{3d} taken together with the N atoms they are independently attached form a 5-7 membered saturated, partially unsaturated or aromatic heterocyclic ring; or

R^{3d} and R^{4d} taken together with the N atom to which they are attached form a 5-8 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

5 J is a direct link or is a member selected from the group consisting of:

-N(-R⁹)-C(=O)-; -C(=O)-N(-R⁹)-; -O-; -S-; -SO-; -SO₂-; -CH₂-; -N(-R⁹)-; and
-N(-R⁹)-SO₂-;

R⁹ is a member selected from the group consisting of:

10 H; -C₁₋₄-alkyl; -C₀₋₄-alkyl-carbocyclic aryl; -(CH₂)₀₋₄-5-6 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S; -(CH₂)₁₋₆-C(=O)-O-C₁₋₄-alkyl; and -(CH₂)₁₋₆-C(=O)-N(R^{6a},R^{6b});

15 R^{6a} and R^{6b} are each a member independently selected from the group consisting of:
H and -C₁₋₆-alkyl;

X is a member selected from the group consisting of:

- (a) phenyl substituted with 0-3 R^{1e} groups;
- 20 (b) naphthyl substituted with 0-3 R^{1e} groups and
- (c) a 6-membered aromatic heterocyclic ring system containing 1-3 N atoms and having 0-3 ring atoms substituted with 0-3 R^{1e} groups; and
- 25 (d) an 8-10 membered fused aromatic heterocyclic bicyclic ring system containing 1-4 heteroatoms selected from N, O and S and 0-3 ring atoms of the fused heterocyclic bicyclic ring system are substituted with 0-3 R^{1e} groups;

30 R^{1e} is a member independently selected from the group consisting of:

Halo; CF₃; -C₁₋₄-alkyl; carbocyclic aryl; -C₀₋₂-alkyl-CN; -O-R^{2e};
 -C₀₋₂-alkyl-C(=O)-O-R^{2e}; -C₀₋₂-alkyl-C(=O)-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-NO₂;
 -C₀₋₂-alkyl-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-SO₂-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-SO₂-R^{2e};
 trihaloalkyl; -O-C₀₋₂-alkyl-O-R^{2e}; -C₀₋₂-alkyl-O-R^{2e}; -O-C₁₋₄-alkyl-
 5 C(=O)-N(R^{2e}, R^{3e}); -O-C₁₋₄-alkyl-C(=O)-O-R^{2e}; -C₀₋₂-alkyl-N(R^{2e})-C(=O)-R^{3e};
 -C₀₋₂-alkyl-N(-R^{2e})-SO₂-R^{3e}; -CH₂-N(R^{2e})-C(=O)-R^{3e}; -CH₂-N(R^{2e})-SO₂-R^{3e};
 -(CH₂)₀₋₆-NR^{2e}R^{3e}; -C(=O)-N(R^{2e}, R^{3e}); -N(-(CH₂)₁₋₆-OR^{2e})₂; -N(R¹⁰)-(CH₂)₁₋₆-OR^{2e};
 -N(R¹⁰)-C(=O)-R^{2e}; -N(R¹⁰)-SO₂-R^{2e}; -C(=N(R¹⁰))-N(R^{2e}, R^{3e}); and a
 10 -(CH₂)₀₋₆-5-6 membered saturated, partially unsaturated or aromatic
 heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

R¹⁰, R^{2e} and R^{3e} are each independently a member selected from the group consisting of:

15 H; -C₁₋₄-alkyl; -C₀₋₂-alkyl-O-R^{1g}; -C₀₋₂-alkyl-N(-R^{1g}, -R^{2g}); -C₁₋₄-alkyl-carbocyclic aryl; -C₁₋₄-alkyl-heterocyclic; and R¹⁰ and R^{2e}, or R^{2e} and R^{3e} together with the N atom to which they are attached can form 5-8 membered heterocyclic ring containing 1-4 heteroatoms selected from N, O and S which can be substituted with 0-2 R^{1g} groups;

20 R^{1g} and R^{2g} are independently a member selected from the group of:

H; halo; -C₁₋₄-alkyl, a carbocyclic aryl group; a saturated, partially unsaturated or aromatic heterocyclic group; -CN; -C(=O)-N(R^{3g})R^{4g}; -C(=O)-OR^{3g}; -NO₂; -(CH₂)_p-NR^{3g}R^{4g}; -SO₂NR^{3g}R^{4g}; -SO₂R^{3g}; -CF₃; and -(CH₂)_pOR^{3g};

25 p is an integer of 0-2;

R^{3g} and R^{4g} are each independently selected from the group consisting of:

H; C₁₋₄-alkyl and -C₀₋₄-alkyl-carbocyclic aryl;

30 and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In certain aspects of this invention, compounds are provided which are useful as diagnostic reagents. In another aspect, the present invention includes pharmaceutical compositions comprising a pharmaceutically effective amount of the 5 compounds of this invention and a pharmaceutically acceptable carrier. In yet another aspect, the present invention includes methods comprising using the above compounds and pharmaceutical compositions for preventing or treating disease states characterized by undesired thrombosis or disorders of the blood coagulation process in mammals, or for preventing coagulation in stored blood products and samples.

10 Optionally, the methods of this invention comprise administering the pharmaceutical composition in combination with an additional therapeutic agent such as an antithrombotic and/or a thrombolytic agent and/or an anticoagulant.

Detailed Description of the Invention

15 Definitions

In accordance with the present invention and as used herein, the following terms are defined with the following meanings, unless explicitly stated otherwise.

20 The term "alkenyl" refers to a trivalent straight chain or branched chain unsaturated aliphatic radical. The term "alkinyl" (or "alkynyl") refers to a straight or branched chain aliphatic radical that includes at least two carbons joined by a triple bond. If no number of carbons is specified alkenyl and alkinyl each refer to radicals having from 2-12 carbon atoms.

25 The term "alkyl" refers to saturated aliphatic groups including straight-chain, branched-chain and cyclic groups having the number of carbon atoms specified, or if no number is specified, having up to 12 carbon atoms. The term "cycloalkyl" as used herein refers to a mono-, bi-, or tricyclic aliphatic ring having 3 to 14 carbon atoms and preferably 3 to 7 carbon atoms.

As used herein, the terms "carbocyclic ring structure" and "C₃₋₁₆ carbocyclic mono, bicyclic or tricyclic ring structure" or the like are each intended to mean stable ring structures having only carbon atoms as ring atoms wherein the ring structure is a substituted or unsubstituted member selected from the group consisting of: a stable 5 monocyclic ring which is aromatic ring ("aryl") having six ring atoms; a stable monocyclic non-aromatic ring having from 3 to 7 ring atoms in the ring; a stable bicyclic ring structure having a total of from 7 to 12 ring atoms in the two rings wherein the bicyclic ring structure is selected from the group consisting of ring structures in which both of the rings are aromatic, ring structures in which one of the 10 rings is aromatic and ring structures in which both of the rings are non-aromatic; and a stable tricyclic ring structure having a total of from 10 to 16 atoms in the three rings wherein the tricyclic ring structure is selected from the group consisting of: ring structures in which three of the rings are aromatic, ring structures in which two of the rings are aromatic and ring structures in which three of the rings are non-aromatic. In 15 each case, the non-aromatic rings when present in the monocyclic, bicyclic or tricyclic ring structure may independently be saturated, partially saturated or fully saturated. Examples of such carbocyclic ring structures include, but are not limited to, cyclopropyl, cyclobutyl, cyclopentyl, cyclohexyl, adamantyl, cyclooctyl, [3.3.0]bicyclooctane, [4.3.0]bicyclononane, [4.4.0]bicyclodecane (decalin), 20 2.2.2]bicyclooctane, fluorenyl, phenyl, naphthyl, indanyl, adamantyl, or tetrahydronaphthyl (tetralin). Moreover, the ring structures described herein may be attached to one or more indicated pendant groups via any carbon atom which results in a stable structure. The term "substituted" as used in conjunction with carbocyclic ring structures means that hydrogen atoms attached to the ring carbon atoms of ring 25 structures described herein may be substituted by one or more of the substituents indicated for that structure if such substitution(s) would result in a stable compound.

The term "aryl" which is included with the term "carbocyclic ring structure" refers to an unsubstituted or substituted aromatic ring, substituted with one, two or 30 three substituents selected from loweralkoxy, loweralkyl, loweralkylamino, hydroxy, halogen, cyano, hydroxyl, mercapto, nitro, thioalkoxy, carboxaldehyde, carboxyl,

carboalkoxy and carboxamide, including but not limited to carbocyclic aryl, heterocyclic aryl, and biaryl groups and the like, all of which may be optionally substituted. Preferred aryl groups include phenyl, halophenyl, loweralkylphenyl, naphthyl, biphenyl, phenanthrenyl and naphthacenyl.

5

The term "arylalkyl" which is included with the term "carbocyclic aryl" refers to one, two, or three aryl groups having the number of carbon atoms designated, appended to an alkyl group having the number of carbon atoms designated. Suitable arylalkyl groups include, but are not limited to, benzyl, picolyl, naphthylmethyl, phenethyl, benzhydryl, trityl, and the like, all of which may be optionally substituted.

As used herein, the term "heterocyclic ring" or "heterocyclic ring system" is intended to mean a substituted or unsubstituted member selected from the group consisting of stable monocyclic ring having from 5-7 members in the ring itself and having from 1 to 4 hetero ring atoms selected from the group consisting of N, O and S; a stable bicyclic ring structure having a total of from 7 to 12 atoms in the two rings wherein at least one of the two rings has from 1 to 4 hetero atoms selected from N, O and S, including bicyclic ring structures wherein any of the described stable monocyclic heterocyclic rings is fused to a hexane or benzene ring; and a stable tricyclic heterocyclic ring structure having a total of from 10 to 16 atoms in the three rings wherein at least one of the three rings has from 1 to 4 hetero atoms selected from the group consisting of N, O and S. Any nitrogen and sulfur atoms present in a heterocyclic ring of such a heterocyclic ring structure may be oxidized. Unless indicated otherwise the terms "heterocyclic ring" or "heterocyclic ring system" include aromatic rings, as well as non-aromatic rings which can be saturated, partially saturated or fully saturated non-aromatic rings. Also, unless indicated otherwise the term "heterocyclic ring system" includes ring structures wherein all of the rings contain at least one hetero atom as well as structures having less than all of the rings in the ring structure containing at least one hetero atom, for example bicyclic ring structures wherein one ring is a benzene ring and one of the rings has one or more hetero atoms are included within the term "heterocyclic ring systems" as well as

bicyclic ring structures wherein each of the two rings has at least one hetero atom. Moreover, the ring structures described herein may be attached to one or more indicated pendant groups via any hetero atom or carbon atom which results in a stable structure. Further, the term "substituted" means that one or more of the hydrogen atoms on the ring carbon atom(s) or nitrogen atom(s) of the each of the rings in the ring structures described herein may be replaced by one or more of the indicated substituents if such replacement(s) would result in a stable compound. Nitrogen atoms in a ring structure may be quaternized, but such compounds are specifically indicated or are included within the term "a pharmaceutically acceptable salt" for a particular compound. When the total number of O and S atoms in a single heterocyclic ring is greater than 1, it is preferred that such atoms not be adjacent to one another. Preferably, there are no more than 1 O or S ring atoms in the same ring of a given heterocyclic ring structure.

15 Examples of monocyclic and bicyclic heterocyclic ring systems, in alphabetical order, are acridinyl, azocinyl, benzimidazolyl, benzofuranyl, benzothiophenyl, benzothiophenyl, benzoxazolyl, benzthiazolyl, benztriazolyl, benztetrazolyl, benzisoxazolyl, benzothiazolyl, benzimidazalanyl, carbazolyl, 4aH-carbazolyl, carbolinyl, chromanyl, chromenyl, cinnolinyl, decahydroquinolinyl, 2H,6H-1,5,2-dithiazinyl, dihydrofuro[2,3-b]tetrahydrofuran, furanyl, furazanyl, imidazolidinyl, imidazolinyl, imidazolyl, 1H-indazolyl, indolinyl, indolizinyl, indolyl, 3H-indolyl, isobenzofuranyl, isochromanyl, isoindazolyl, isoindolinyl, isoindolyl, isoquinolinyl (benzimidazolyl), isothiazolyl, isoxazolyl, morpholinyl, naphthyridinyl, octahydroisoquinolinyl, oxadiazolyl, 1,2,3-oxadiazolyl, 1,2,4-oxadiazolyl, 25 1,2,5-oxadiazolyl, 1,3,4-oxadiazolyl, oxazolidinyl, oxazolyl, oxazolidinyl, pyrimidinyl, phenanthridinyl, phenanthrolinyl, phenazinyl, phenothiazinyl, phenoxathiinyl, phenoxazinyl, phthalazinyl, piperazinyl, piperidinyl, pteridinyl, purinyl, pyranyl, pyrazinyl, pyrazolidinyl, pyrazolinyl, pyrazolyl, pyridazinyl, pyridooxazole, pyridoimidazole, pyridothiazole, pyridinyl, pyridyl, pyrimidinyl, 30 pyrrolidinyl, pyrrolinyl, 2H-pyrrolyl, pyrrolyl, quinazolinyl, quinolinyl, 4H-quinolizinyl, quinoxalinyl, quinuclidinyl, tetrahydrofuranyl,

tetrahydroisoquinoliny1, tetrahydroquinoliny1, 6H-1,2,5-thiadaziny1, 1,2,3-thiadiazolyl, 1,2,4-thiadiazolyl, 1,2,5-thiadiazolyl, 1,3,4-thiadiazolyl, thianthrenyl, thiazolyl, thiienyl, thienothiazolyl, thienooxazolyl, thienoimidazolyl, thiophenyl, triazinyl, 1,2,3-triazolyl, 1,2,4-triazolyl, 1,2,5-triazolyl, 1,3,4-triazolyl and xanthenyl. Preferred heterocyclic ring structures include, but are not limited to, pyridinyl, furanyl, thiienyl, pyrrolyl, pyrazolyl, pyrrolidinyl, imidazolyl, indolyl, benzimidazolyl, 1H-indazolyl, oxazolinyl, or isatinoyl. Also included are fused ring and spiro compounds containing, for example, the above heterocyclic ring structures.

10 As used herein the term "aromatic heterocyclic ring system" has essentially the same definition as for the monocyclic and bicyclic ring systems except that at least one ring of the ring system is an aromatic heterocyclic ring or the bicyclic ring has an aromatic or non-aromatic heterocyclic ring fused to an aromatic carbocyclic ring structure.

15 The terms "halo" or "halogen" as used herein refer to Cl, Br, F or I
substituents. The term "haloalkyl", and the like, refer to an aliphatic carbon radicals
having at least one hydrogen atom replaced by a Cl, Br, F or I atom, including
mixtures of different halo atoms. Trihaloalkyl includes trifluoromethyl and the like as
20 preferred radicals, for example.

The term "methylene" refers to $-\text{CH}_2-$.

The term "pharmaceutically acceptable salts" includes salts of compounds derived from the combination of a compound and an organic or inorganic acid. These compounds are useful in both free base and salt form. In practice, the use of the salt form amounts to use of the base form; both acid and base addition salts are within the scope of the present invention.

30 "Pharmaceutically acceptable acid addition salt" refers to salts retaining the biological effectiveness and properties of the free bases and which are not biologically

or otherwise undesirable, formed with inorganic acids such as hydrochloric acid, hydrobromic acid, sulfuric acid, nitric acid, phosphoric acid and the like, and organic acids such as acetic acid, propionic acid, glycolic acid, pyruvic acid, oxalic acid, maleic acid, malonic acid, succinic acid, fumaric acid, tartaric acid, citric acid, 5 benzoic acid, cinnamic acid, mandelic acid, methanesulfonic acid, ethanesulfonic acid, p-toluenesulfonic acid, salicyclic acid and the like.

“Pharmaceutically acceptable base addition salts” include those derived from inorganic bases such as sodium, potassium, lithium, ammonium, calcium, magnesium, 10 iron, zinc, copper, manganese, aluminum salts and the like. Particularly preferred are the ammonium, potassium, sodium, calcium and magnesium salts. Salts derived from pharmaceutically acceptable organic nontoxic bases include salts of primary, secondary, and tertiary amines, substituted amines including naturally occurring substituted amines, cyclic amines and basic ion exchange resins, such as 15 isopropylamine, trimethylamine, diethylamine, triethylamine, tripropylamine, ethanolamine, 2-diethylaminoethanol, trimethamine, dicyclohexylamine, lysine, arginine, histidine, caffeine, procaine, hydrabamine, choline, betaine, ethylenediamine, glucosamine, methylglucamine, theobromine, purines, piperazine, piperidine, N-ethylpiperidine, polyamine resins and the like. Particularly preferred 20 organic nontoxic bases are isopropylamine, diethylamine, ethanolamine, trimethamine, dicyclohexylamine, choline, and caffeine.

"Biological property" for the purposes herein means an *in vivo* effector or antigenic function or activity that is directly or indirectly performed by a compound of 25 this invention that are often shown by *in vitro* assays. Effector functions include receptor or ligand binding, any enzyme activity or enzyme modulatory activity, any carrier binding activity, any hormonal activity, any activity in promoting or inhibiting adhesion of cells to an extracellular matrix or cell surface molecules, or any structural role. Antigenic functions include possession of an epitope or antigenic site that is 30 capable of reacting with antibodies raised against it.

In the compounds of this invention, carbon atoms bonded to four non-identical substituents are asymmetric. Accordingly, the compounds may exist as diastereoisomers, enantiomers or mixtures thereof. The syntheses described herein may employ racemates, enantiomers or diastereomers as starting materials or 5 intermediates. Diastereomeric products resulting from such syntheses may be separated by chromatographic or crystallization methods, or by other methods known in the art. Likewise, enantiomeric product mixtures may be separated using the same techniques or by other methods known in the art. Each of the asymmetric carbon atoms, when present in the compounds of this invention, may be in one of two 10 configurations (R or S) and both are within the scope of the present invention.

Preferred Embodiments

The invention provides a compound according to the formula (I):



15 where:

A is selected from:

(a) C_1-C_6 -alkyl;

(b) C_3-C_8 -cycloalkyl;

20

(c) $-N(R^1, R^2)$, $N(R^1, R^2)-C(=NR^3)-$, $N(R^1, R^2)-C(=NR^3)-N(R^4)-$, $R^1-C(=NR^3)-$, $R^1-C(=NR^3)-N(R^4)-$;

(d) phenyl, which is independently substituted with 0-2 R substituents;

25

(e) naphthyl, which is independently substituted with 0-2 R substituents;

and

30 (f) a monocyclic or fused bicyclic heterocyclic ring system having from 5 to 10 ring atoms, wherein 1-4 ring atoms of the ring system are selected

from N, O and S, and wherein the ring system may be substituted with 0-2 R substituents;

R is selected from:

5 H, halo, -CN, -CO₂R¹, -C(=O)-N(R¹, R²), -(CH₂)_m-CO₂R¹, -(CH₂)_m-C(=O)-N(R¹, R²), -NO₂, -SO₂N(R¹, R²), -SO₂R¹, -(CH₂)_mNR¹R², -(CH₂)_m-C(=NR³)-R¹, -(CH₂)_m-C(=NR³)-N(R¹, R²), -(CH₂)_mNR¹-C₃₋₆heterocyclics, C₁₋₄alkyl, C₂₋₆alkenyl, C₂₋₆alkynyl, C₃₋₈cycloalkyl, C₀₋₄alkylC₃₋₈cycloalkyl, -CF₃, -OR², and a 5-6 membered 10 heterocyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic system may be independently replaced with a member selected from the group consisting of halo, C₁-C₄-alkyl, CN-C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂;

15

m is an integer of 0-2;

R¹, R², R³ and R⁴ are independently selected from the group consisting of:

20 H, -OR⁵, -N(-R⁵, -R⁶), -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, and -NO₂; or

25

R¹ and R², or R² and R³ taken together can form a 3-8 membered cycloalkyl or a heterocyclic ring system, wherein the heterocyclic ring system may have from 3 to 10 ring atoms, with 1 to 2 rings being in the ring system and contain from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C₁-C₄-alkyl, -CN -C₁-

C_{1-4} alkyl, C_{2-6} alkenyl, C_{2-6} alkynyl, C_{3-8} cycloalkyl, C_{0-4} alkyl C_{3-8} cycloalkyl and -NO_2 ;

R^5 and R^6 are independently selected from the group consisting of:

5 H , -C_{1-4} alkyl, -C_{2-6} alkenyl, -C_{2-6} alkynyl, -C_{3-8} cycloalkyl, -C_{0-4} alkyl C_{3-8} cycloalkyl, -C_{0-4} alkylphenyl and -C_{0-4} alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C_{1-4} alkyl, -C_{2-6} alkenyl, -C_{2-6} alkynyl, -C_{3-8} cycloalkyl, -C_{0-4} alkyl C_{3-8} cycloalkyl, -CN , and -NO_2 ; or

10 R^5 and R^6 taken together can form a 3-8 membered cycloalkyl or a heterocyclic ring system, wherein the heterocyclic ring system may have from 3 to 10 ring atoms, with 1 to 2 rings being in the ring system and contain from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C_{1-4} alkyl, -CN -C_{1-4} alkyl, -C_{2-6} alkenyl, -C_{2-6} alkynyl, -C_{3-8} cycloalkyl, -C_{0-4} alkyl C_{3-8} cycloalkyl and -NO_2 ;

15 20 Q is a member selected from the group consisting of:

a direct link, $\text{-CH}_2\text{-}$, $\text{-C(=O)\text{-}}$, $\text{-O\text{-}}$, $\text{-N(R}^7\text{\text{-})\text{-}}$, $\text{-N(R}^7\text{\text{-})CH}_2\text{-}$, $\text{-CH}_2\text{N(R}^7\text{\text{-})\text{-}}$, $\text{-C(=NR}^7\text{\text{-})\text{-}}$, $\text{-C(=O)\text{-N(R}^7\text{\text{-})\text{-}}$, $\text{-N(R}^7\text{\text{-})C(=O)\text{-}}$, $\text{-S\text{-}}$, $\text{-SO\text{-}}$, $\text{-SO}_2\text{-}$, $\text{-SO}_2\text{-N(R}^7\text{\text{-})\text{-}}$ and $\text{-N(R}^7\text{\text{-})SO}_2\text{-}$;

25 R^7 is selected from:

20 30 H , -C_{1-4} alkyl, -C_{2-6} alkenyl, -C_{2-6} alkynyl, -C_{3-8} cycloalkyl, -C_{0-4} alkyl C_{3-8} cycloalkyl, -C_{0-4} alkylphenyl and -C_{0-4} alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C_{1-4} alkyl, -C_{2-6} alkenyl, -C_{2-6} alkynyl, -C_{3-8} cycloalkyl, -C_{0-4} alkyl C_{3-8} cycloalkyl, -CN , and -NO_2 ;

D is a direct link or is a member selected from the group consisting of:

- (a) phenyl, which is independently substituted with 0-2 R^{1a} substituents;
- 5 (b) naphthyl, which is independently substituted with 0-2 R^{1a} substituents; and
- 10 (c) a monocyclic or fused bicyclic heterocyclic ring system having from 5 to 10 ring atoms, wherein 1-4 ring atoms of the ring system are selected from N, O and S, and wherein the ring system may be substituted from 0-2 R^{1a} substituents;

R^{1a} is selected from:

halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, -NO₂, -(CH₂)_nNR^{2a}R^{3a}, -(CH₂)_nCO₂R^{2a}, -(CH₂)_nCONR^{2a}R^{3a}, -SO₂NR^{2a}R^{3a}, -SO₂R^{2a}, -CF₃, -OR^{2a}, and a 5-6 membered aromatic 15 heterocyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the aromatic heterocyclic system may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN and -NO₂;

R^{2a} and R^{3a} are independently selected from the group consisting of:

H, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 25 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN and -NO₂;

30

n is an integer of 0-2;

E is a direct link or a member selected from the group consisting of:

-C₁₋₂-alkyl-, -O-, -S-, -SO-, -SO₂-, -C₀₋₁-alkyl-C(=O)-,
-C₀₋₁-alkyl-C(=O)-N(-R⁸)- C₀₋₁-alkyl-, -C₀₋₁-alkyl-N(-R⁸)-C(=O)-C₀₋₁-alkyl-,
5 -N(-R⁸)-C(=O)-N(-R⁸)- and -C₀₋₁-alkyl-N(-R⁸)-;

R⁸ is a member selected from the group consisting of:

H; -C₁₋₄-alkyl; -C₀₋₄-alkylaryl; -C₀₋₄-alkyl-heteroaryl; -C₁₋₄-alkyl-C(=O)-OH,
-C₁₋₄-alkyl-C(=O)-O-C₁₋₄-alkyl, and -C₁₋₄-alkyl-C(=O)-N(-R^{2b}, -R^{3b});

10

R^{2b} and R^{3b} are each a member independently selected from the group consisting of:

H, -C₁₋₄-alkyl, -C₀₋₄-alkyl-aryl; -C₀₋₄-alkyl-heterocyclic group, and R^{2b} and R^{3b} together with the N atom to which they are attached can form a 5-8 membered heterocyclic ring containing 1-4 heteroatoms selected from N, O and S, wherein the heterocyclic ring may be substituted with 0-2 R^{1c} groups;

15

R^{1c} is a member selected from the group consisting of:

Halo; -C₁₋₄-alkyl; -CN, -NO₂; -C(=O)-N(-R^{2c}, -R^{3c}); -C(=O)-OR^{2c};
-(CH₂)_q-N(-R^{2c}, -R^{3c}); -SO₂-N(-R^{2c}, -R^{3c}); -SO₂R^{2c}; -CF₃ and -(CH₂)_q-OR^{2c};

20

R^{2c} and R^{3c} are each independently a member selected from the group consisting of:

H; -C₁₋₄-alkyl and -C₁₋₄-alkyl-aryl;

q is an integer of 0-2;

25

G is a member selected from the group consisting of:

(a) C₂-alkenyl or C₃₋₈-cycloalkenyl, wherein the alkenyl and cycloalkenyl attachment points are the alkenyl carbon atoms and wherein C₂-alkenyl or C₃₋₈-cycloalkenyl are substituted with 0-4 R^{1d} groups;

30

- (b) a phenylene group wherein the ring carbon atoms of the phenylene group are substituted with 0-4 R^{1d} groups;
- (c) a 3-8 membered a saturated, partially unsaturated or aromatic monocyclic- heterocyclic ring system containing 1-4 heteroatoms selected from N, O and S, wherein 0-4 ring atoms of the heterocyclic ring may be substituted with 0-4 R^{1d} groups; and,

5

- (d) an 8-10 membered fused heterocyclic bicyclic ring system, containing 1-4 heteroatoms selected from N, O and S, wherein 0-4 ring atoms of the fused bicyclic ring system may be substituted with 0-4 R^{1d} groups;

10

R^{1d} is a member selected from the group consisting of:

H, halo; C₁₋₆-alkyl, carbocyclic aryl, -CN; -NO₂; -(CH₂)₀₋₆-NR^{2d}R^{3d};

-SO₂NR^{2d}R^{3d}; -SO₂R^{2d}; -CF₃; -(CH₂)₀₋₆-OR^{2d}; -OH,

-OC₁₋₆alkyl, -O-(CH₂)₁₋₆OR^{2d}; -O-(CH₂)₁₋₆-C(=O)-O-R^{2d};

15 -O-(CH₂)₁₋₆-C(=O)-N(R^{2d},R^{3d}); -N(R^{5a})-(CH₂)₁₋₆-OR^{2d};

-N(R^{5a})-(CH₂)₁₋₆-N(R^{2d},R^{3d}); -C(=O)-N(R^{2d},R^{3d});

-N(R^{5a})-(CH₂)₁₋₆-C(=O)-N(R^{2d},R^{3d}); -N(-(CH₂)₁₋₆-OR^{2d})₂;

-N(R^{5a})-(CH₂)₁₋₆-OR^{2d}; -N(R^{5a})-C(=O)-R^{2d}; -N(R^{5a})-SO₂-R^{2d};

20 -(CH₂)₀₋₆-C(=O)-O-R^{2d}; -(CH₂)₀₋₆-C(=O)-N(R^{2d},R^{3d});

-(CH₂)₀₋₆-C(=NR^{2d})-N(R^{3d},R^{4d}); -(CH₂)₀₋₆-N(R^{5a})C(=NR^{2d})-N(R^{3d},R^{4d}); and

25 -(CH₂)₀₋₆-N(-R^{3d})- group attached directly by its nitrogen atom to a carbon atom of a 5 to 6 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S; and a -(CH₂)₀₋₆- group attached to a 5-6 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

30 R^{5a}, R^{2d}, R^{3d} and R^{4d} are each independently a member selected from the group consisting of:

H, C₁₋₆-alkyl and C₁₋₆-alkylaryl, -CN; -NO₂; carbocyclic aryl, -CN; -NO₂; or

R^{2d} and R^{3d} taken together with the N atoms ther are independently attached form a 5-7 membered saturated, partially unsaturated or aromatic heterocyclic ring; or

5

R^{3d} and R^{4d} taken together with the N atom to which they are attached form a 5-8 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

10 J is a direct link or is a member selected from the group consisting of:

- $N(-R^9)-C(=O)-$; $-C(=O)-N(-R^9)-$; $-O-$; $-S-$; $-SO-$; $-SO_2-$; $-CH_2-$; $-N(-R^9)-$; and
 $-N(-R^9)-SO_2-$;

R^9 is a member selected from the group consisting of:

15 H; $-C_{1-4}$ -alkyl; $-C_{0-4}$ -alkyl-carbocyclic aryl; $-(CH_2)_{0-4}$ -5-6 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S; $-(CH_2)_{1-6}-C(=O)-O-C_{1-4}$ -alkyl; and
 $-(CH_2)_{1-6}-C(=O)-N(R^{6a},R^{6b})$;

20 R^{6a} and R^{6b} are each a member independently selected from the group consisting of:
H and $-C_{1-6}$ -alkyl;

X is a member selected from the group consisting of:

25 (a) phenyl substituted with 0-3 R^{1e} groups;
(b) naphthyl substituted with 0-3 R^{1e} groups;
(c) a 6-membered aromatic heterocyclic ring system containing 1-3 N atoms and having 0-3 ring atoms substituted with 0-3 R^{1e} groups; and

30

(d) an 8-10 membered fused aromatic heterocyclic bicyclic ring system containing 1-4 heteroatoms selected from N, O and S and 0-3 ring atoms of the fused heterocyclic bicyclic ring system are substituted with 0-3 R^{1e} groups;

5

R^{1e} is a member independently selected from the group consisting of:
 Halo; CF₃; -C₁₋₄-alkyl; carbocyclic aryl; -C₀₋₂-alkyl-CN; -O-R^{2e};
 -C₀₋₂-alkyl-C(=O)-O-R^{2e}; -C₀₋₂-alkyl-C(=O)-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-NO₂;
 -C₀₋₂-alkyl-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-SO₂-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-SO₂-R^{2e};
 10 trihaloalkyl; -O-C₀₋₂-alkyl-O-R^{2e}; -C₀₋₂-alkyl-O-R^{2e}; -O-C₁₋₄-alkyl-
 C(=O)-N(R^{2e}, R^{3e}); -O-C₁₋₄-alkyl-C(=O)-O-R^{2e}; -C₀₋₂-alkyl-N(R^{2e})-C(=O)-R^{3e};
 -C₀₋₂-alkyl-N(-R^{2e})-SO₂-R^{3e}; -CH₂-N(R^{2e})-C(=O)-R^{3e}; -CH₂-N(R^{2e})-SO₂-R^{3e};
 -(CH₂)₀₋₆-NR^{2e}R^{3e}; -C(=O)-N(R^{2e}, R^{3e}); -N(-(CH₂)₁₋₆-OR^{2e})₂;
 15 -N(R¹⁰)-(CH₂)₁₋₆-OR^{2e}; -N(R¹⁰)-C(=O)-R^{2e}; -N(R¹⁰)-SO₂-R^{2e};
 -C(=N(R¹⁰))-N(R^{2e}, R^{3e}); and a -(CH₂)₀₋₆-5-6 membered saturated, partially
 20 unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected
 from N, O and S;

R¹⁰, R^{2e} and R^{3e} are each independently a member selected from the group consisting
 20 of:

H; -C₁₋₄-alkyl; -C₀₋₂-alkyl-O-R^{1g}; -C₀₋₂-alkyl-N(-R^{1g}, -R^{2g}); -C₁₋₄-alkyl-carbocyclic aryl; -C₁₋₄-alkyl-heterocyclic; and R¹⁰ and R^{2e}, or R^{2e} and
 R^{3e} together with the N atom to which they are attached can form 5-8
 25 membered heterocyclic ring containing 1-4 heteroatoms selected from N, O
 and S which can be substituted with 0-2 R^{1g} groups;

R^{1g} and R^{2g} are independently a member selected from the group of:
 H; halo; -C₁₋₄-alkyl, a carbocyclic aryl group; a saturated, partially unsaturated
 or aromatic heterocyclic group; -CN; -C(=O)-N(R^{3g})R^{4g}; -C(=O)-OR^{3g}; -NO₂;
 30 -(CH₂)_p-NR^{3g}R^{4g}; -SO₂NR^{3g}R^{4g}; -SO₂R^{3g}; -CF₃; and -(CH₂)_pOR^{3g};

p is an integer of 0-2; and

R^{3g} and R^{4g} are each independently selected from the group consisting of:

H; C₁₋₄-alkyl and -C₀₋₄-alkyl-carbocyclic aryl;

5

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

A preferred embodiment of formula I are compounds of formula (Ia):

10 A-Q-D-E-G-J-X (Ia)

where:

A is selected from:

(a) C₁-C₆-alkyl;

15 (b) C₃-C₈-cycloalkyl;

(c) -N(R¹,R²), N(R¹,R²)-C(=NR³)-, N(R¹,R²)-C(=NR³)-N(R⁴)-, R¹-C(=NR³)-, R¹-C(=NR³)-N(R⁴)-;

20 (d) phenyl, which is independently substituted with 0-2 R substituents;

(e) naphthyl, which is independently substituted with 0-2 R substituents;
and

25 (f) monocyclic or fused bicyclic heterocyclic ring system having from 5 to 10 ring atoms, wherein 1-4 ring atoms of the ring system are selected from N, O and S, and wherein the ring system may be substituted with 0-2 R substituents;

30 R is selected from:

H, halo, -CN, -CO₂R¹, -C(=O)-N(R¹, R²), -(CH₂)_m-CO₂R¹, -(CH₂)_m-C(=O)-N(R¹, R²), -NO₂, -SO₂N(R¹, R²), -SO₂R¹, -(CH₂)_mNR¹R², -(CH₂)_m-C(=NR³)-R¹, -(CH₂)_m-C(=NR³)-N(R¹, R²), -(CH₂)_m-N(R⁴)-C(=NR³)-N(R¹, R²), -(CH₂)_mNR¹- group attached to a 3-6 membered heterocyclic ring having from 1 to 3 heteroatoms selected from the group consisting of N, O and S, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CF₃, -OR², and a 5-6 membered heterocyclic aromatic or partially saturated system, including imidazoline, containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic system may be independently replaced with a member selected from the group consisting of halo, -methyl, -C_{2-C4}-alkyl, -CN, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂;

m is an integer of 0-2;

15 R¹, R², R³ and R⁴ are independently selected from the group consisting of: H, -OR⁵, -N(-R⁵, -R⁶), -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl 20 moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, and -NO₂; or

25 R¹ and R², or R² and R³ taken together can form a 3-8 membered cycloalkyl or a heterocyclic ring system, wherein the heterocyclic ring system may have from 3 to 10 ring atoms, with 1 to 2 rings being in the ring system and contain from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C_{1-C4}-alkyl, -CN, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂;

R^5 and R^6 are independently selected from the group consisting of:

5 H, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, and -NO₂; or

10 R^5 and R^6 taken together can form a 3-8 membered cycloalkyl or a heterocyclic ring system, wherein the heterocyclic ring system may have from 3 to 10 ring atoms, with 1 to 2 rings being in the ring system and contain from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C₁-C₄-alkyl, -CN -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂;

15

Q is a member selected from the group consisting of:

20 a direct link, -CH₂-, -C(=O)-, -O-, -NH-, -NMe-, -NHCH₂-, -NMeCH₂-, -CH₂NH-, -C(=NH)-, -C(=O)-NH-, -NH-C(=O)-, -CH₂NMe-, -C(=NMe)-;

D is a direct link or is a member selected from the group consisting of:

25 (a) phenyl, which is independently substituted with 0-2 R^{1a} substituents;

 (b) naphthyl, which is independently substituted with 0-2 R^{1a} substituents; and

 a monocyclic or fused bicyclic heterocyclic ring system having from 5 to 10 ring atoms, wherein 1-4 ring atoms of the ring system are selected from N, O and S, and wherein the ring system may be substituted from 0-2 R^{1a} substituents;

30

R^{1a} is selected from:

halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, -NO₂, -(CH₂)_nNR^{2a}R^{3a}, -(CH₂)_nCO₂R^{2a}, -(CH₂)_nCONR^{2a}R^{3a}, -SO₂NR^{2a}R^{3a}, -SO₂R^{2a}, -CF₃, -OR^{2a}, and a 5-6 membered aromatic

5 heterocyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the aromatic heterocyclic system may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN and -NO₂;

10

R^{2a} and R^{3a} are independently selected from the group consisting of:

H, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylphenyl and -C₀₋₄alkylnaphthyl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN and -NO₂;

n is an integer of 0-2;

20

E is a member selected from the group consisting of:

a direct link, -O-, -NH-, -CH₂NH-, -NHCH₂-, -NMe-, -NH-C(=O)-NH-, -C(=O)-NH-, -NH-C(=O)-;

25 G is a member selected from the group consisting of:

(a) a C₂-alkenyl group or a C₃₋₈-cycloalkenyl group, wherein the alkenyl group and cycloalkenyl group attachment points are the alkenyl carbon atoms and wherein the C₂-alkenyl group or C₃₋₈-cycloalkenyl group is substituted with 0-4 R^{1d} groups;

30

- (b) a phenylene group wherein the ring carbon atoms of the phenylene group are substituted with 0-4 R^{1d} groups;
- 5 (c) a 3-8 membered a saturated, partially unsaturated or aromatic monocyclic- heterocyclic ring system containing 1-4 heteroatoms selected from N, O and S, wherein 0-4 ring atoms of the heterocyclic ring may be substituted with 0-4 R^{1d} groups; and,
- 10 (d) an 8-10 membered fused heterocyclic bicyclic ring system, containing 1-4 heteroatoms selected from N, O and S, wherein 0-4 ring atoms of the fused bicyclic ring system may be substituted with 0-4 R^{1d} groups;

R^{1d} is a member selected from the group consisting of:

15 H, halo; C₁₋₆-alkyl, carbocyclic aryl, -CN; -NO₂; -(CH₂)₀₋₆-NR^{2d}R^{3d};
 -SO₂NR^{2d}R^{3d}; -SO₂R^{2d}; -CF₃; -(CH₂)₀₋₆-OR^{2d}; -OH,
 -OC₁₋₆alkyl, -O-(CH₂)₁₋₆OR^{2d}; -O-(CH₂)₁₋₆-C(=O)-O-R^{2d};
 -O-(CH₂)₁₋₆-C(=O)-N(R^{2d},R^{3d}); -N(R^{5a})-(CH₂)₁₋₆-OR^{2d};
 -N(R^{5a})-(CH₂)₁₋₆-N(R^{2d},R^{3d}); -C(=O)-N(R^{2d},R^{3d});
 -N(R^{5a})-(CH₂)₁₋₆-C(=O)-N(R^{2d},R^{3d}); -N(-(CH₂)₁₋₆-OR^{2d})₂;
 20 -N(R^{5a})-(CH₂)₁₋₆-OR^{2d}; -N(R^{5a})-C(=O)-R^{2d}; -N(R^{5a})-SO₂-R^{2d}; -(CH₂)₀₋₆-C(=O)-O-R^{2d}; -(CH₂)₀₋₆-C(=O)-N(R^{2d},R^{3d});
 -(CH₂)₀₋₆-C(=NR^{2d})-N(R^{3d},R^{4d}); and a -(CH₂)₀₋₆-N(R^{3d}) group which is attached via the nitrogen atom to a carbon atom of a 5 to 6 membered
 25 saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S, and a -(CH₂)₀₋₆- group attached to a 5-6 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

30 R^{5a}, R^{2d}, R^{3d} and R^{4d} are each independently a member selected from the group consisting of:

H, C₁₋₆-alkyl and C₁₋₆-alkylaryl, -CN; -NO₂; carbocyclic aryl, -CN; -NO₂; or

R^{2d} and R^{3d} taken together with the N atoms ther are independently attached form a 5-7 membered saturated, partially unsaturated or aromatic heterocyclic ring; or

5

R^{3d} and R^{4d} taken together with the N atom to which they are attached form a 5-8 membered saturated, partially unsaturated or aromatic heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;

10 J is a member selected from the group consisting of:

a direct link, -O-, -NH-, -NMe-, -C(=O)-NH-, -NH-C(=O)-;

X is a member selected from the group consisting of:

(a) phenyl substituted with 0-3 R^{1e} groups;

15

(b) naphthyl substituted with 0-3 R^{1e} groups and

(c) a 6-membered aromatic heterocyclic ring system containing 1-3 N atoms and having 0-3 ring atoms substituted with 0-3 R^{1e} groups; and

20

(d) an 8-10 membered fused aromatic heterocyclic bicyclic ring system containing 1-4 heteroatoms selected from N, O and S and 0-3 ring atoms of the fused heterocyclic bicyclic ring system are substituted with 0-3 R^{1e} groups;

25

R^{1e} is a member independently selected from the group consisting of:

Halo; CF_3 ; - C_{1-4} -alkyl; carbocyclic aryl; - C_{0-2} -alkyl-CN; -O- R^{2e} ;

- C_{0-2} -alkyl-C(=O)-O- R^{2e} ; - C_{0-2} -alkyl-C(=O)-N(R^{2e} , R^{3e}); - C_{0-2} -alkyl-NO₂;

- C_{0-2} -alkyl-N(R^{2e} , R^{3e}); - C_{0-2} -alkyl-SO₂-N(R^{2e} , R^{3e}); - C_{0-2} -alkyl-SO₂-R^{2e};

30

trihaloalkyl; -O- C_{0-2} -alkyl-O- R^{2e} ; - C_{0-2} -alkyl-O- R^{2e} ;

-O- C_{1-4} -alkyl-C(=O)-N(R^{2e} , R^{3e}); -O- C_{1-4} -alkyl-C(=O)-O- R^{2e} ;

$\text{-C}_{0-2}\text{-alkyl-N(R}^{2e}\text{)-C(=O)-R}^{3e}\text{; -C}_{0-2}\text{-alkyl-N(-R}^{2e}\text{)-SO}_2\text{-R}^{3e}\text{;}$
 $\text{-CH}_2\text{-N(R}^{2e}\text{)-C(=O)-R}^{3e}\text{; -CH}_2\text{-N(R}^{2e}\text{)-SO}_2\text{-R}^{3e}\text{; -(CH}_2\text{)}_{0-6}\text{-NR}^{2e}\text{R}^{3e}\text{;}$
 $\text{-C(=O)-N(R}^{2e}\text{,R}^{3e}\text{); -N(-(CH}_2\text{)}_{1-6}\text{-OR}^{2e}\text{)}_2\text{; -N(R}^{10}\text{)-(CH}_2\text{)}_{1-6}\text{-OR}^{2e}\text{;}$
 $\text{-N(R}^{10}\text{)-C(=O)-R}^{2e}\text{; -N(R}^{10}\text{)-SO}_2\text{-R}^{2e}\text{; -C(=N(R}^{10}\text{))-N(R}^{2e}\text{,R}^{3e}\text{); and a}$
 $5 \text{-(CH}_2\text{)}_{0-6}\text{-5-6 membered saturated, partially unsaturated or aromatic}$
 $\text{heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;}$

R^{10} , R^{2e} and R^{3e} are each independently a member selected from the group consisting of:

$10 \text{H; -C}_{1-4}\text{-alkyl; -C}_{0-2}\text{-alkyl-O-R}^{1g}\text{; -C}_{0-2}\text{-alkyl-N(-R}^{1g}\text{, -R}^{2g}\text{); -C}_{1-4}\text{-alkyl-carbocyclic aryl; -C}_{1-4}\text{-alkyl-heterocyclic; and R}^{10}$ and R^{2e} , or R^{2e} and R^{3e} together with the N atom to which they are attached can form 5-8 membered heterocyclic ring containing 1-4 heteroatoms selected from N, O and S which can be substituted with 0-2 R^{1g} groups;

15R^{1g} and R^{2g} are independently a member selected from the group of:

$\text{H; halo; -C}_{1-4}\text{-alkyl, a carbocyclic aryl group; a saturated, partially unsaturated or aromatic heterocyclic group; -CN; -C(=O)-N(R}^{3g}\text{,R}^{4g}\text{); -C(=O)-OR}^{3g}\text{; -NO}_2\text{; -(CH}_2\text{)}_p\text{-NR}^{3g}\text{R}^{4g}\text{; -SO}_2\text{NR}^{3g}\text{R}^{4g}\text{; -SO}_2\text{R}^{3g}\text{; -CF}_3\text{; and -(CH}_2\text{)}_p\text{OR}^{3g}\text{;}$

$20 \text{p is an integer of 0-2; and}$

R^{3g} and R^{4g} are each independently selected from the group consisting of:

$\text{H; C}_{1-4}\text{-alkyl and -C}_{0-4}\text{-alkyl-carbocyclic aryl;}$

$25 \text{and all pharmaceutically acceptable isomers, salts, hydrates and prodrug derivatives thereof.}$

$\text{Another preferred embodiment of formula I are compounds of formula (Ib):}$

$30 \text{A-Q-D-E-G-J-X} \quad \text{(Ib)}$

where:

A is selected from:

(a) C_1 - C_6 -alkyl;

5 (b) C_3 - C_8 -cycloalkyl;

(c) $-N(R^1, R^2)$, $N(R^1, R^2)-C(=NR^3)-$, $N(R^1, R^2)-C(=NR^3)-N(R^4)-$, $R^1-C(=NR^3)-$, $R^1-C(=NR^3)-N(R^4)-$;

10 (d) phenyl, which is independently substituted with 0-2 R substituents;

(e) naphthyl, which is independently substituted with 0-2 R substituents;

15 (f) a monocyclic or fused bicyclic ring system having from 5 to 10 ring atoms, wherein 1-4 ring atoms of the ring system are selected from N, O and S, and wherein the ring system may be substituted with 0-2 R substituents;

R is selected from:

20 H, halo, $-C_{1-4}$ alkyl, $-C_{2-6}$ alkenyl, $-C_{2-6}$ alkynyl, $-C_{3-8}$ cycloalkyl, $-C_{0-4}$ alkyl C_{3-8} cycloalkyl, $-CF_3$, $-CN$, $-(CH_2)_m-CO_2R^1$, $-(CH_2)_m-C(=O)-N(R^1, R^2)$, $-(CH_2)_m-C(=S)-N(R^1, R^2)$, $-NO_2$, $-(CH_2)_m-SO_2N(R^1, R^2)$, $-(CH_2)_m-SO_2R^1$, $-(CH_2)_mNR^1R^2$, $-(CH_2)_mOR^1$, $-(CH_2)_m-C(=NR^3)-R^1$, $-(CH_2)_m-C(=NR^3)-N(R^1, R^2)$, $-(CH_2)_m-N(R^4)-C(=NR^3)-N(R^1, R^2)$, and a 3-8 membered cyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C_1 - C_4 -alkyl, $-CN$ $-C_{1-4}$ alkyl, $-C_{2-6}$ alkenyl, $-C_{2-6}$ alkynyl, $-C_{3-8}$ cycloalkyl, $-C_{0-4}$ alkyl C_{3-8} cycloalkyl and $-NO_2$;

25

30 m is an integer of 0-2;

R¹, R², R³ and R⁴ are independently selected from the group consisting of:

5 H, -(CH₂)₀₋₄OR⁵, -(CH₂)₀₋₄-CO₂R⁵, -(CH₂)₀₋₄N(-R⁵, -R⁶), -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylaryl and -C₀₋₄alkylheteroaryl, and a 3-8 membered cyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C₁-C₄-alkyl, -CN, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂; or

10 R¹ and R², or R² and R³ taken together can form a 3-8 membered cycloalkyl or a heterocyclic ring system, wherein the heterocyclic ring system may have from 3 to 10 ring atoms, with 1 to 2 rings being in the ring system and contain from 1-4 heteroatoms selected from N, O and S, where the hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C₁-C₄-alkyl, -CN, -CO₂R⁵, -OH, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂;

15 20 R⁵ and R⁶ are independently selected from the group consisting of:

H, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylaryl and -C₀₋₄alkylheteroaryl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, and -NO₂; or

25 30 R⁵ and R⁶ taken together can form a 3-8 membered cycloalkyl or a heterocyclic ring system, wherein the heterocyclic ring system may have from 3 to 10 ring atoms, with 1 to 2 rings being in the ring system and contain from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms

on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -CN -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂;

5 Q is a member selected from the group consisting of:

a direct link, -CH₂₋, -C(=O)-, -O-, -N(R⁷)-, -N(R⁷)CH₂₋, -CH₂N(R⁷)-, -C(=NR⁷)-, -C(=O)-N(R⁷)-, -N(R⁷)-C(=O)-, -S-, -SO-, -SO₂-, -SO₂-N(R⁷)- and -N(R⁷)-SO₂-; preferably, Q is a member selected from the group consisting of: a direct link, -CH₂₋, -C(=O)-, -O-, -NH-, -NMe-, -NHCH₂₋, -NMeCH₂₋, -CH₂NH-, -C(=NH)-, -C(=O)-NH-, -NH-C(=O)-, -CH₂NMe-, -C(=NMe)-;

10

R⁷ is selected from:

15 H; -C₁₋₄alkyl; -C₀₋₄alkylaryl; -C₀₋₄alkyl-heteroaryl; -C₁₋₄alkyl-O-C₁₋₄alkyl, -C₁₋₄alkyl-N(-C₁₋₄alkyl, -C₁₋₄alkyl); -C₁₋₄alkyl-C(=O)-O-C₁₋₄alkyl, and -C₁₋₄alkyl-C(=O)-N(-C₁₋₄alkyl, -C₁₋₄alkyl);

D is a direct link or is a member selected from the group consisting of:

20 (a) phenyl, which is independently substituted with 0-2 R^{1a} substituents;
 (b) naphthyl, which is independently substituted with 0-2 R^{1a} substituents; and
 (c) a monocyclic or fused bicyclic heterocyclic ring system having from 5 to 10 ring atoms, wherein 1-4 ring atoms of the ring system are selected from N, O and S, and wherein the ring system may be substituted from 0-2 R^{1a} substituents;

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R^{1a} is selected from:

halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN, -NO₂, -(CH₂)_nOR^{2a}, -(CH₂)_nNR^{2a}R^{3a}, -(CH₂)_nCO₂R^{2a}, -(CH₂)_nCONR^{2a}R^{3a}, -SO₂NR^{2a}R^{3a}, -SO₂R^{2a}, -CF₃, and a 5-6 membered aromatic heterocyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the aromatic heterocyclic

30

system may be independently replaced with a member selected from the group consisting of halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN and -NO₂;

5 R^{2a} and R^{3a} are independently selected from the group consisting of:

H, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -C₀₋₄alkylaryl and -C₀₋₄alkylheteroaryl, wherein from 1-4 hydrogen atoms on the ring atoms of the phenyl and naphthyl moieties may be independently replaced with a member selected from the group consisting of 10 halo, -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl, -CN and -NO₂;

n is an integer of 0-2;

15 E is a direct link or a member selected from the group consisting of:

-C₁₋₂-alkyl-, -S-, -SO-, -SO₂-, -O-C₀₋₁-alkyl-, -C₀₋₁-alkyl-O-, -C₀₋₁-alkyl-N(-R⁸)-, -N(-R⁸)-C₀₋₁-alkyl-, -C₀₋₁-alkyl-C(=O)-N(-R⁸)-C₀₋₁-alkyl, -C₀₋₁-alkyl-N(-R⁸)-C(=O)-C₀₋₁-alkyl-, and -C₀₋₁-alkyl-N(-R⁸)-C(=O)-N(-R⁸)-C₀₋₁-alkyl-; preferably, E is a member selected from the group consisting of: a direct link, -O-, -NH-, -CH₂NH-, -NHCH₂-, -CH₂O-, -OCH₂-, -NMe-, -NH-C(=O)-NH-, -CH₂-NH-C(=O)-NH-, -C(=O)-NH-, -NH-C(=O)-, -C(=O)-NMe-, -NMe-C(=O)-;

R⁸ is a member selected from the group consisting of:

25 H; -C₁₋₄-alkyl; -C₀₋₄-alkylaryl; -C₀₋₄-alkyl-heteroaryl; -C₁₋₄-alkyl-OR^{2b}, -C₁₋₄-alkyl-N(-R^{2b}, -R^{3b}); -C₁₋₄-alkyl-C(=O)-OR^{2b}; -C₁₋₄-alkyl-C(=O)-N(-R^{2b}, -R^{3b}); -C₀₋₄-alkyl-C(=O)-R^{2b}; and -C₀₋₄-alkyl-SO₂-R^{2b};

R^{2b} and R^{3b} are each a member independently selected from the group consisting of:

30 H, -C₁₋₄-alkyl, -C₁₋₄-alkyl-CO₂-C₀₋₄-alkyl, -C₀₋₄-alkyl-aryl; -C₀₋₄-alkyl-heterocyclic group, and R^{2b} and R^{3b} together with the N atom to which

they are attached can form a 5-8 membered heterocyclic ring containing 1-4 heteroatoms selected from N, O and S, wherein the heterocyclic ring may be substituted with 0-2 R^{1c} groups;

5 R^{1c} is a member selected from the group consisting of:

Halo; -C₁₋₄-alkyl; -CN, -NO₂; -C(=O)-N(-R^{2c}, -R^{3c}); -C(=O)-OR^{2c}; -(CH₂)_q-N(-R^{2c}, -R^{3c}); -SO₂-N(-R^{2c}, -R^{3c}); -SO₂R^{2c}; -CF₃ and -(CH₂)_q-OR^{2c};

R^{2c} and R^{3c} are each independently a member selected from the group consisting of:

10 H; -C₁₋₄-alkyl and -C₁₋₄-alkyl-aryl;

q is an integer of 0-2;

G is a member selected from the group consisting of:

15 (a) C₂-alkenyl or C₃₋₈-cycloalkenyl, wherein the alkenyl and cycloalkenyl attachment points are the alkenyl carbon atoms and wherein the -C₂- alkenyl or -C₃₋₈-cycloalkenyl are substituted with 0-4 R^{1d} groups;

20 (b) a phenylene group wherein the ring carbon atoms of the phenylene group are substituted with 0-4 R^{1d} groups;

25 (c) a 3-8 membered a saturated, partially unsaturated or aromatic monocyclic ring system containing 1-4 heteroatoms selected from N, O and S, wherein 0-2 ring atoms of the heterocyclic ring may be substituted with 0-4 R^{1d} groups; and,

(d) an 8-10 membered fused cyclic system, containing 0-4 heteroatoms selected from N, O and S, wherein 0-2 ring atoms of the fused bicyclic ring system may be substituted with 0-4 R^{1d} groups;

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R^{1d} is a member selected from the group consisting of:

H, halo; -CF₃; -OCF₃, -OCF₂H, -OCFH₂, -OCH₂CF₃, -OCF₂CF₃, C₁₋₆-alkyl, carbocyclic aryl, -CN; -NO₂; -(CH₂)₀₋₆-NR^{2d}R^{3d}; -(CH₂)₀₋₆-OR^{2d}; -OH, -OC₁₋₆alkyl, -O-(CH₂)₁₋₆OR^{2d}; -O-(CH₂)₁₋₆-NR^{2d}R^{3d}; -N(R^{5a})-(CH₂)₁₋₆-OR^{2d}; -N(R^{5a})-(CH₂)₁₋₆-N(R^{2d},R^{3d}); -(CH₂)₀₋₆-C(=O)-O-R^{2d}; 5 -(CH₂)₀₋₆-C(=O)-N(R^{2d},R^{3d}); -O-(CH₂)₁₋₆-C(=O)-O-R^{2d}; -O-(CH₂)₁₋₆-C(=O)-N(R^{2d},R^{3d}); -N(R^{5a})-(CH₂)₁₋₆-C(=O)-O-R^{2d}; -N(R^{5a})-(CH₂)₁₋₆-C(=O)-N(R^{2d},R^{3d}); -N(-(CH₂)₁₋₆-OR^{2d})₂; -N(-(CH₂)₁₋₆-N(R^{2d},R^{3d}))₂; -(CH₂)₀₋₆-SO₂NR^{2d}R^{3d}; -(CH₂)₀₋₆-SO₂R^{2d}; -(CH₂)₀₋₆-N(R^{5a})-C(=O)-R^{2d}; -(CH₂)₀₋₆-N(R^{5a})-SO₂-R^{2d}; -(CH₂)₀₋₆-C(=NR^{2d})-N(R^{3d},R^{4d}); -(CH₂)₀₋₆-N(R^{5a})C(=NR^{2d})-N(R^{3d},R^{4d}); -(CH₂)₀₋₆-N(R^{5a})C(=NR^{2d})-R^{4d}; -O-(CH₂)₁₋₆-SO₂NR^{2d}R^{3d}; -O-(CH₂)₁₋₆-SO₂R^{2d}; -O-(CH₂)₁₋₆-N(R^{5a})-C(=O)-R^{2d}; -O-(CH₂)₁₋₆-N(R^{5a})-SO₂-R^{2d}; -O-(CH₂)₁₋₆-C(=NR^{2d})-N(R^{3d},R^{4d}); -O-(CH₂)₁₋₆-N(R^{5a})C(=NR^{2d})-N(R^{3d},R^{4d}); -O-(CH₂)₁₋₆-N(R^{5a})C(=NR^{2d})-R^{4d}; -N(R^{5d})-(CH₂)₁₋₆-SO₂NR^{2d}R^{3d}; -N(R^{5d})-(CH₂)₁₋₆-SO₂R^{2d}; -N(R^{5d})-(CH₂)₁₋₆-N(R^{5a})-C(=O)-R^{2d}; -N(R^{5d})-(CH₂)₁₋₆-N(R^{5a})-SO₂-R^{2d}; -N(R^{5d})-(CH₂)₁₋₆-C(=NR^{2d})-N(R^{3d},R^{4d}); -N(R^{5d})-(CH₂)₁₋₆-N(R^{5a})C(=NR^{2d})-R^{4d}; and a 3-8 membered cyclic system containing from 1-4 heteroatoms selected from N, O and S, wherein from 1-4 hydrogen atoms on the heterocyclic ring system may be independently replaced with a member selected from the group consisting of halo, C₁-C₄-alkyl, -CN -C₁₋₄alkyl, -C₂₋₆alkenyl, -C₂₋₆alkynyl, -C₃₋₈cycloalkyl, -C₀₋₄alkylC₃₋₈cycloalkyl and -NO₂;

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R^{5a}, R^{2d}, R^{3d}, R^{4d} and R^{5d} are each independently a member selected from the group consisting of:

H, C₁₋₆-alkyl and C₁₋₆-alkylaryl, -CN; -NO₂; or

30 R^{2d} and R^{3d}, or R^{3d} and R^{4d} taken together with the N atoms they are independently attached form a 3-8 membered saturated, partially unsaturated or aromatic heterocyclic ring;

J is a direct link or is a member selected from the group consisting of:

-N(-R⁹)-C(=O)-; -C(=O)-N(-R⁹)-; -O-; -S-; -SO-; -SO₂-; -SO₂N(R9)-, -CH₂-; -N(-R⁹)-; and -N(-R⁹)-SO₂-; preferably, J is a member selected from the group

consisting of: a direct link, -O-, -SO₂-, -SO₂NH-, -NH-, -NMe-, -C(=O)-NH-,

5 -NH-C(=O)-;

R⁹ is a member selected from the group consisting of:

10 H; -C₁₋₄-alkyl; -C₀₋₄-alkylaryl; -C₀₋₄-alkyl-heteroaryl; -C₁₋₄-alkyl-OR^{6a}, -C₁₋₄-alkyl-N(-R^{6a}, -R^{6b}); -C₁₋₄-alkyl-C(=O)-OR^{6a}, and -C₁₋₄-alkyl-C(=O)-N(-R^{6a}, -R^{6b});

R^{6a} and R^{6b} are each a member independently selected from the group consisting of:

H and -C₁₋₆-alkyl;

15 X is a member selected from the group consisting of:

(a) phenyl substituted with 0-3 R^{1e} groups;

(b) naphthyl substituted with 0-3 R^{1e} groups and

20 (c) a 6-membered aromatic heterocyclic ring system containing 1-3 N atoms and having 0-3 ring atoms substituted with 0-3 R^{1e} groups; and

(d) an 8-10 membered fused bicyclic ring system containing 1-4 heteroatoms selected from N, O and S and 0-3 ring atoms of the fused 25 heterocyclic bicyclic ring system are substituted with 0-3 R^{1e} groups;

R^{1e} is a member independently selected from the group consisting of:

30 Halo; CF₃; -C₁₋₄-alkyl; carbocyclic aryl; -C₀₋₂-alkyl-CN; -O-R^{2e}; -C₀₋₂-alkyl-C(=O)-O-R^{2e}; -C₀₋₂-alkyl-C(=O)-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-NO₂; -C₀₋₂-alkyl-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-SO₂-N(R^{2e}, R^{3e}); -C₀₋₂-alkyl-SO₂-R^{2e}; trihaloalkyl; -O-C₀₋₂-alkyl-O-R^{2e}; -C₀₋₂-alkyl-O-R^{2e}; -O-C₁₋₄-alkyl-

$C(=O)-N(R^{2e}, R^{3e})$; $-O-C_{1-4}\text{-alkyl-}C(=O)-O-R^{2e}$; $-C_{0-2}\text{-alkyl-}N(R^{2e})-C(=O)-R^{3e}$;
 $-C_{0-2}\text{-alkyl-}N(-R^{2e})-SO_2-R^{3e}$; $-CH_2-N(R^{2e})-C(=O)-R^{3e}$; $-CH_2-N(R^{2e})-SO_2-R^{3e}$;
 $-(CH_2)_{0-6}-NR^{3e}R^{3e}$; $-C(=O)-N(R^{2e}, R^{3e})$; $-N(-(CH_2)_{1-6}-OR^{2e})_2$; $-N(R^{10})-(CH_2)_{1-6}-OR^{2e}$;
5 $-N(R^{10})-C(=O)-R^{2e}$; $-N(R^{10})-SO_2-R^{2e}$; $-C(=N(R^{10}))-N(R^{2e}, R^{3e})$; and a
 $-(CH_2)_{0-6}\text{-}5\text{-}6$ membered saturated, partially unsaturated or aromatic
 $\text{heterocyclic ring containing 1-4 heteroatoms selected from N, O and S;}$

R^{10} , R^{2e} and R^{3e} are each independently a member selected from the group consisting
of:

10 H ; $-C_{1-4}\text{-alkyl}$; $-C_{0-2}\text{-alkyl-}O-R^{1g}$; $-C_{0-2}\text{-alkyl-}N(-R^{1g}, -R^{2g})$; $-C_{1-4}\text{-alkyl-carbocyclic aryl}$;
 $-C_{1-4}\text{-alkyl-heterocyclic}$; and R^{10} and R^{2e} , or R^{2e} and
 R^{3e} together with the N atom to which they are attached can form 5-8
membered heterocyclic ring containing 1-4 heteroatoms selected from N, O
and S which can be substituted with 0-2 R^{1g} groups;

15

R^{1g} and R^{2g} are independently a member selected from the group of:

H ; halo; $-C_{1-4}\text{-alkyl}$, a carbocyclic aryl group; a saturated, partially unsaturated
or aromatic heterocyclic group; $-CN$; $-C(=O)-N(R^{3g})R^{4g}$; $-C(=O)-OR^{3g}$; $-NO_2$;
 $-(CH_2)_p-NR^{3g}R^{4g}$; $-SO_2NR^{3g}R^{4g}$; $-SO_2R^{3g}$; $-CF_3$; and $-(CH_2)_pOR^{3g}$;

20

p is an integer of 0-2;

R^{3g} and R^{4g} are each independently selected from the group consisting of:

H ; $C_{1-4}\text{-alkyl}$ and $-C_{0-4}\text{-alkyl-carbocyclic aryl}$;

25

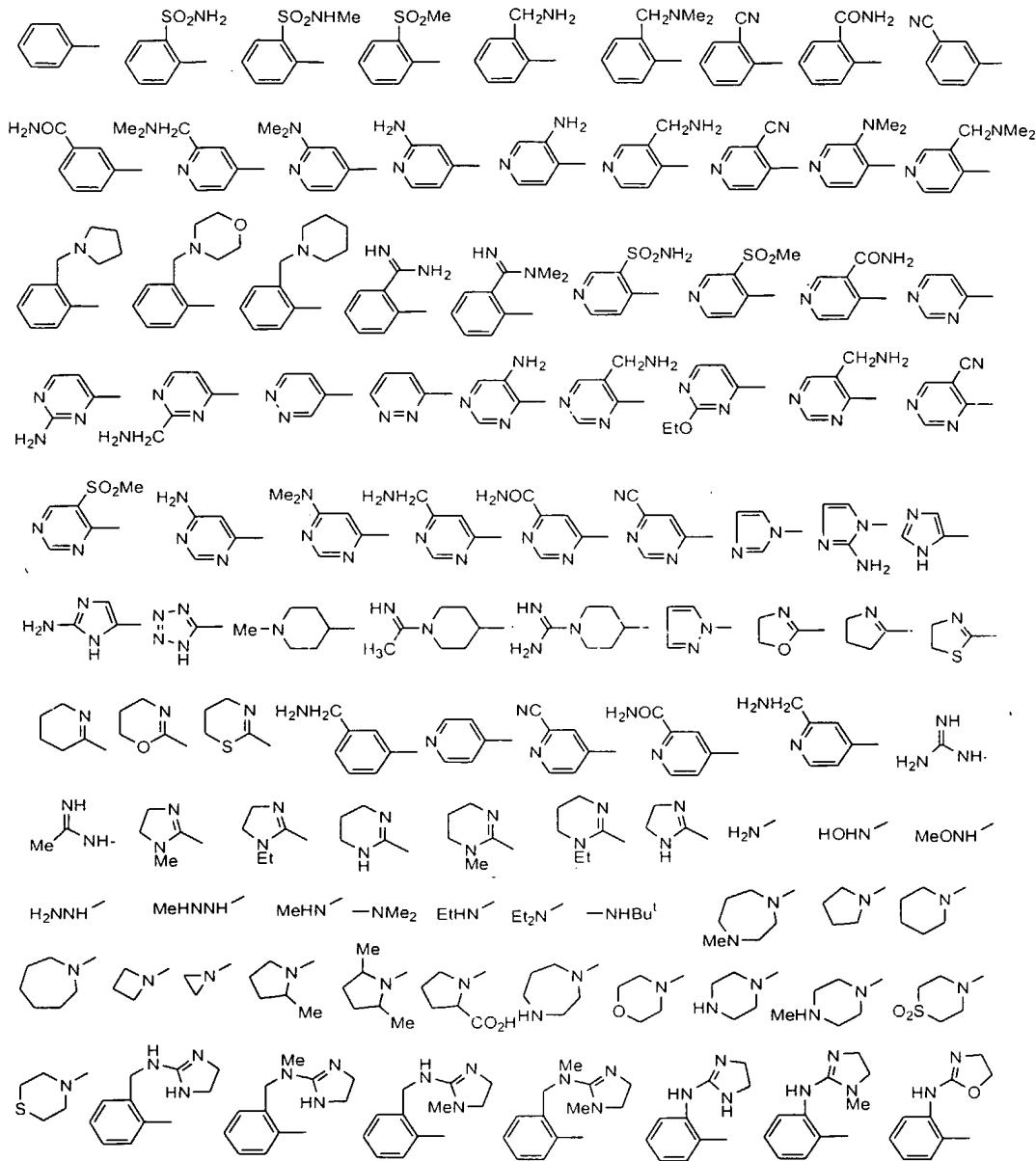
and all pharmaceutically acceptable isomers, salts, hydrates, solvates and
prodrug derivatives thereof.

Another preferred embodiment of formula I are compounds of formula (Ic):

30 $A-Q-D-E-G-J-X \quad (Ic)$

where:

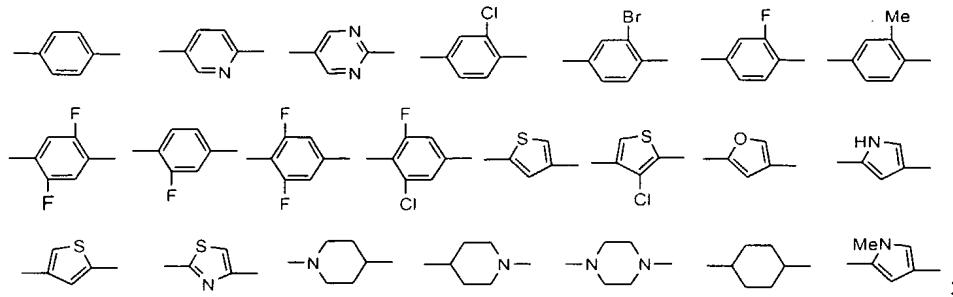
A is a member selected from the group consisting of:



Q is a member selected from the group consisting of:

5 a direct link, -C(=O)-, -NH-, -NMe-, -NHCH₂-, -NMeCH₂-, -C(=NH)-, -C(=NMe)-;

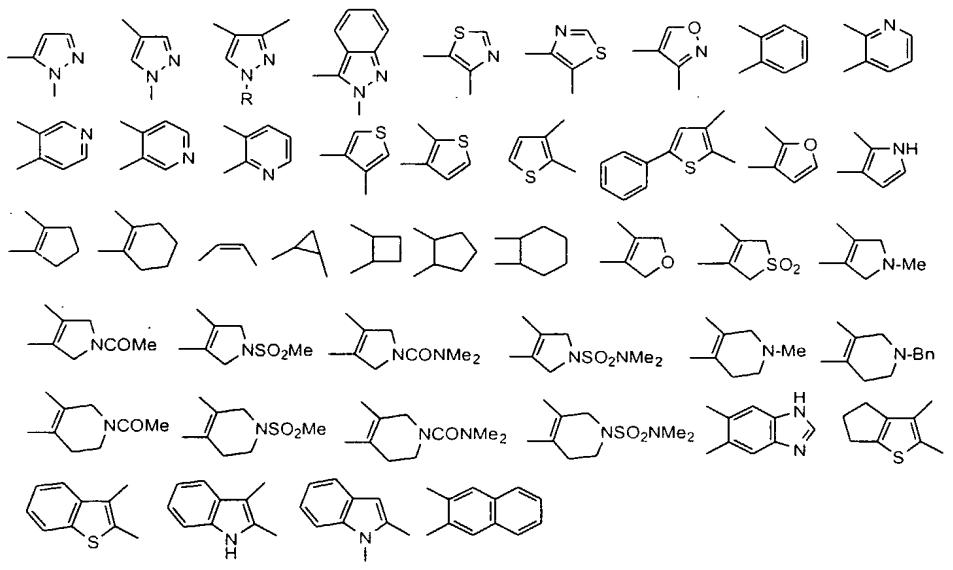
D is a direct link or is a member selected from the group consisting of:



E is a member selected from the group consisting of:

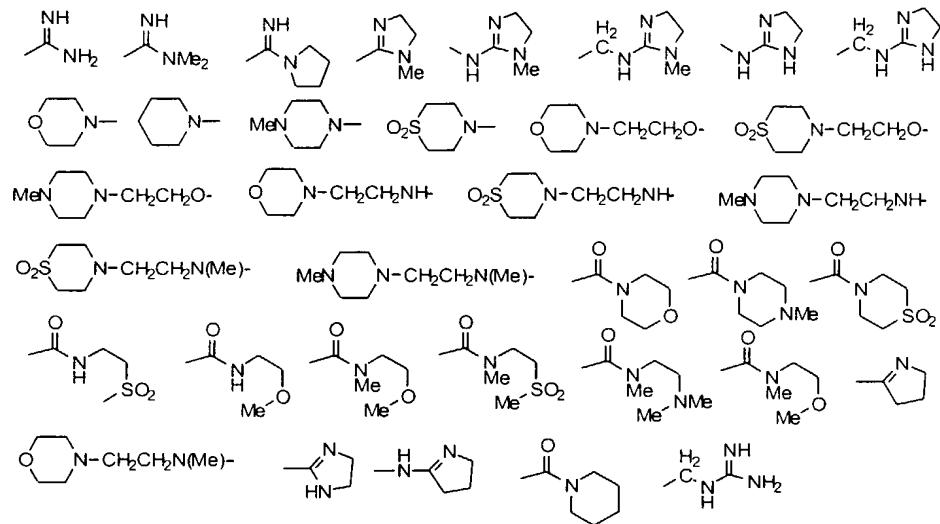
5 a direct link, -CH₂NH-, -C(=O)-NH-, -NH-C(=O)-;

G is a member selected from the group consisting of:



10 G is substituted by 0-4 R^{1d} groups and each R^{1d} group is independently selected from the group consisting of:

H, -CH₃, -CF₃, -Cl, -F, -Br, -NH₂, -NMe₂, -OH, -OMe, -NHSO₂Me, -NO₂, -CN, -C(=O)-OMe, -CO₂H, -CONH₂, -SO₂NH₂, -SO₂CH₃, -NHC(=O)Me, -C(=O)N(-Me)₂, -CH₂NH₂, -CH₂N(-Me)₂, -CH₂OH, -OCH₂CO₂H, -OCH₂C(=O)-OMe, -OCH₂C(=O)-NH₂ and -OCH₂C(=O)N(-Me)₂.

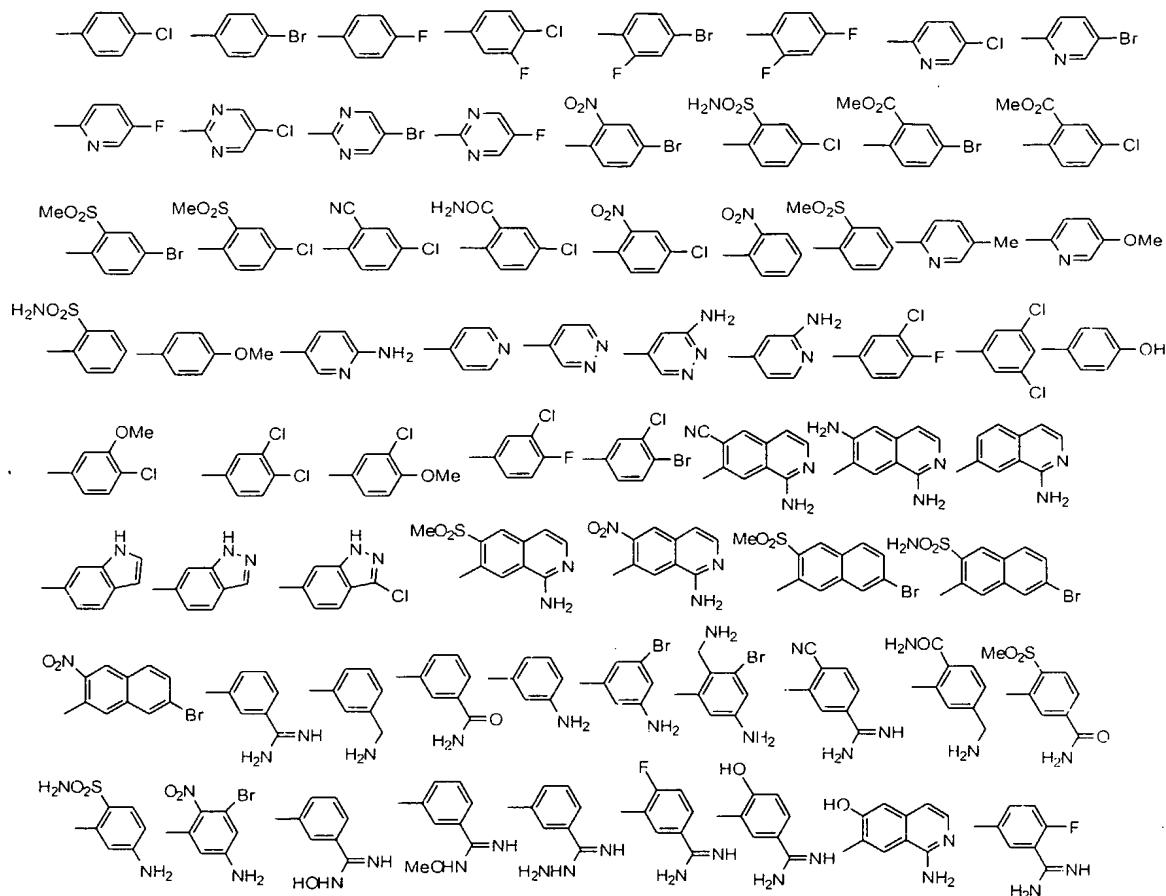


J is a member selected from the group consisting of:

a direct link, -O-, -NH-, -C(=O)-NH- and -NH-C(=O)-;

5

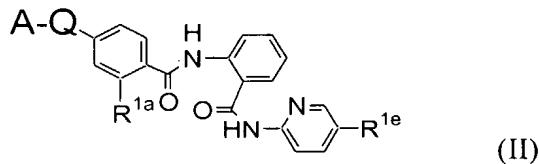
X is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

5

Still another preferred embodiment of the invention are compounds of the following formula (II):



where:

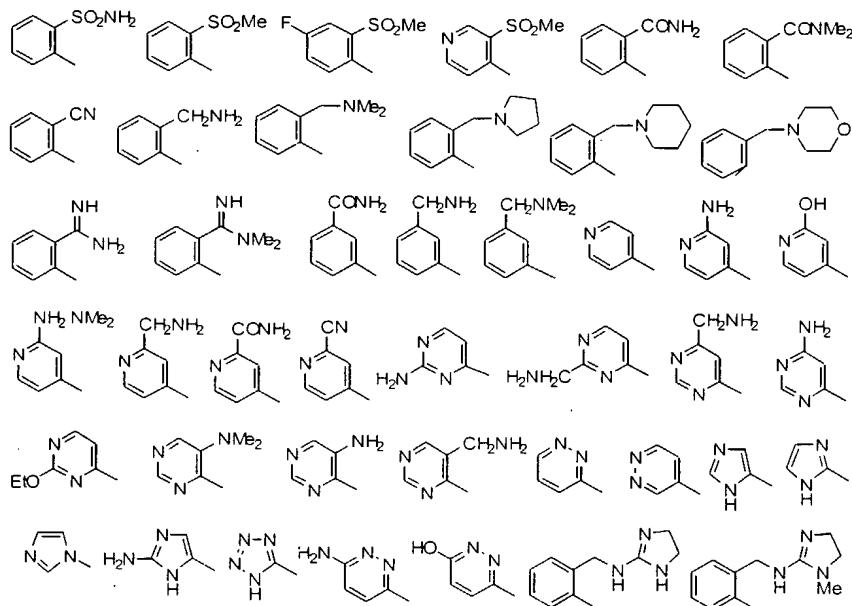
10 R^{1a} is a member selected from the group consisting of:

H, -F, -Cl and -Br;

R^{le} is a member selected from the group consisting of:

H, -F, -Cl, -Br, -OMe, -OH, -Me, -CF₃ and -CH₂NH₂; and

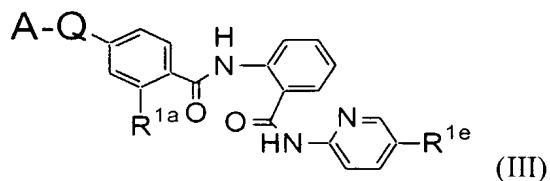
A-Q is a member selected from the group consisting of:



5

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

Still another preferred embodiment the invention are compounds of formula
10 (III):



where:

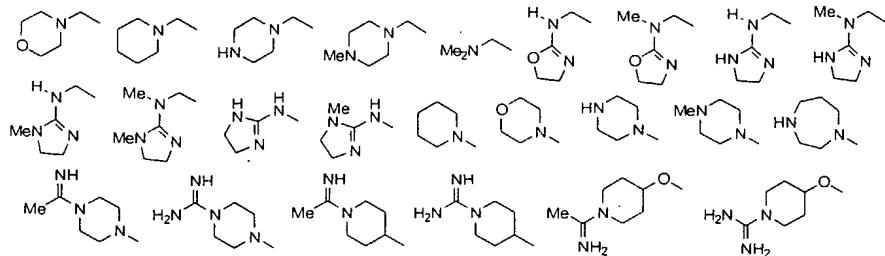
R^{1a} is a member selected from the group consisting of:

H, -F, -Cl and -Br;

15 R^{1e} is a member selected from the group consisting of:

H, -F, -Cl, -Br, -OMe, -OH, -Me, -CF₃ and -CH₂NH₂; and

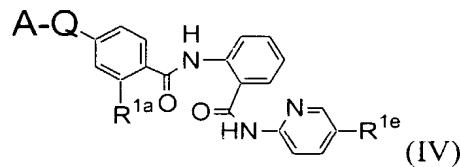
A-Q is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

5

Another further preferred embodiment of the invention are compounds according to the formula (IV):



10

where:

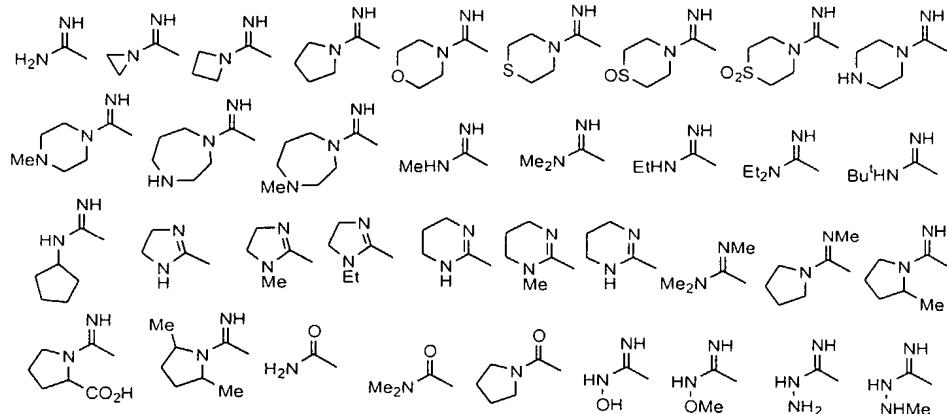
R^{1a} is a member selected from the group consisting of:

H, -F, -Cl and -Br;

R^{1e} is a member selected from the group consisting of:

15

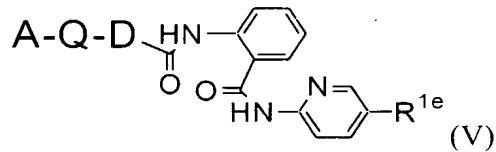
A-Q is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

5

Still another preferred embodiment of the invention are compounds of formula (V):

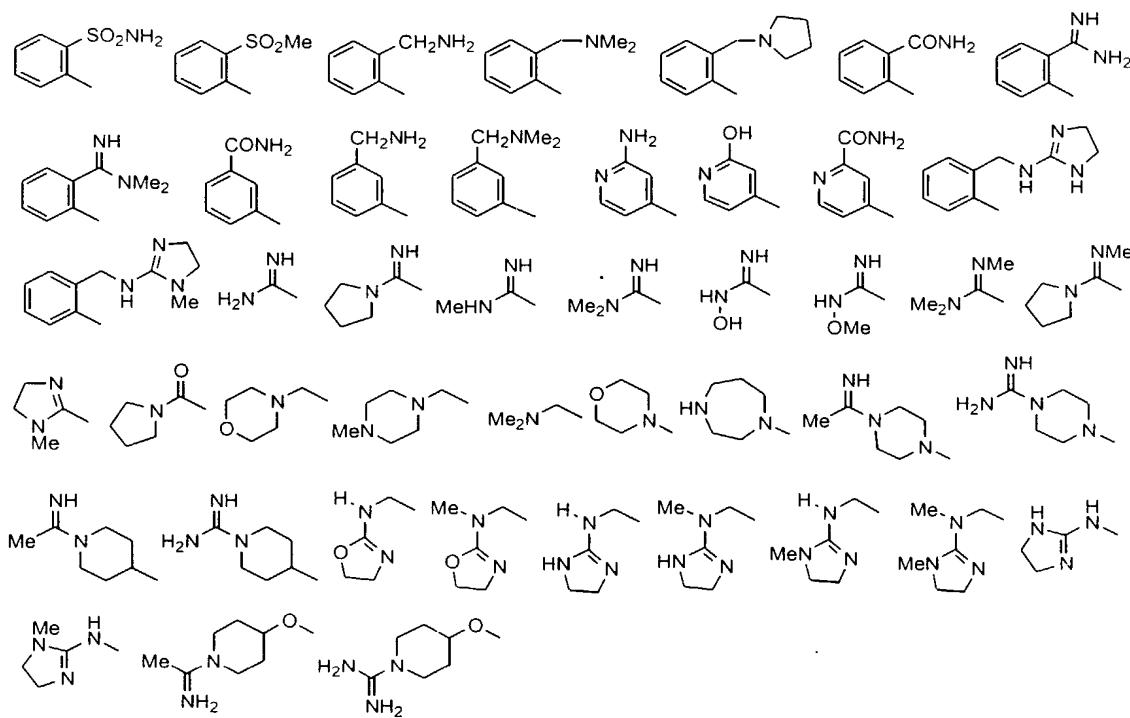


where:

10 R^{1e} is a member selected from the group consisting of:

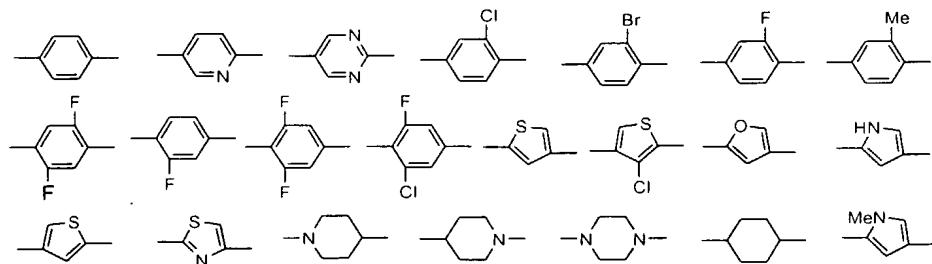
H, -F, -Cl, -Br, -OMe, -OH, -Me, -CF₃ and -CH₂NH₂;

A-Q is a member selected from the group consisting of:



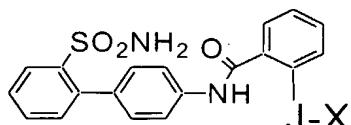
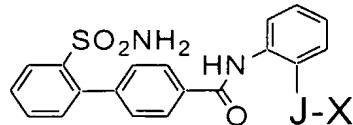
; and

D is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In another preferred embodiment, the present invention provides a compound according to the formula:

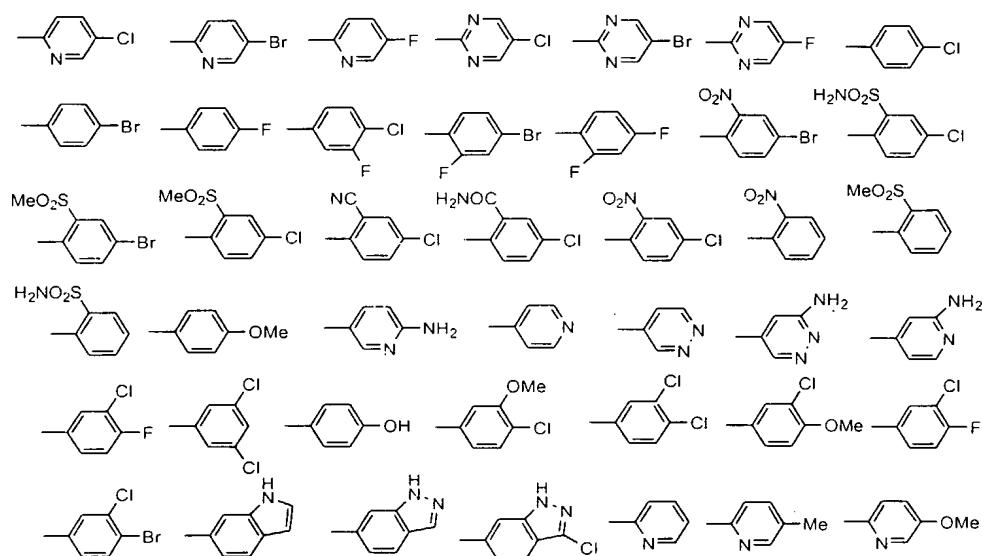


where:

5 J is a member selected from the group consisting of:

-NHC(=O)-, -C(=O)NH-;

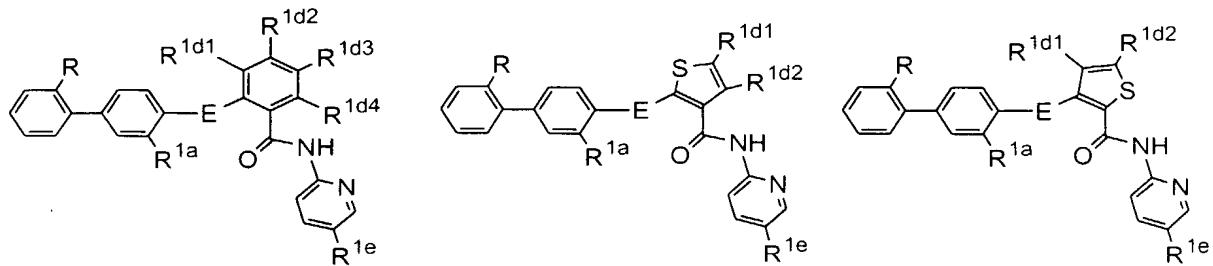
X is a member selected from the group consisting of:



10

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In another embodiment the present invention provides a compound according to the formula:



wherein:

R is a member selected from the group of:

5 -SO₂-NH₂ and -SO₂Me;

R^{1a} is a member selected from the group of:

H, -F, -Cl and Br;

E is a member selected from the group consisting of:

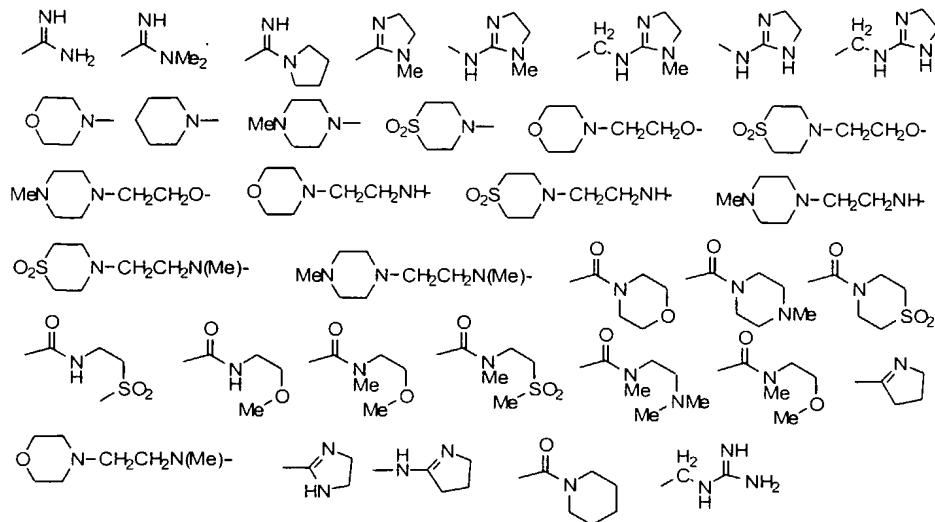
-NHC(=O)- and -C(=O)NH-;

10 R^{1d1}, R^{1d2}, and R^{1d4} are independently a member selected from the group of:

H, -F, -Cl, -Br, -Me, -NO₂, -OH, -OMe, -NH₂, -NHOAc, -NHSO₂Me, -CH₂OH and -CH₂NH₂;

R^{1d3} is a member selected from the group of:

15 H, -CH₃, -CF₃, -Cl, -F, -Br, -NH₂, -N(-Me)₂, -OH, -OMe, -NHSO₂Me, -NO₂, -CN, -C(=O)-OMe, -CO₂H, -C(=O)-NH₂, -SO₂NH₂, -SO₂CH₃, -NHC(=O)-Me, -C(=O)-N(-Me)₂, -CH₂NH₂, -CH₂-N(-Me)₂, -CH₂OH, -OCH₂CO₂H, -OCH₂C(=O)-OMe, -OCH₂C(=O)-NH₂, and -OCH₂C(=O)-N(-Me)₂.

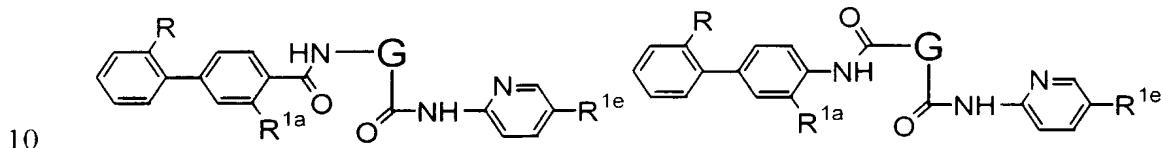


R^{1e} is a member selected from the group of :

F, -Cl, -Br, -OH, -Me and -OMe,

5 and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In another further preferred embodiment, the present invention provides a compound according to the formula:



wherein:

R is a member selected from the group consisting of:

-SO2NH2, -SO2Me;

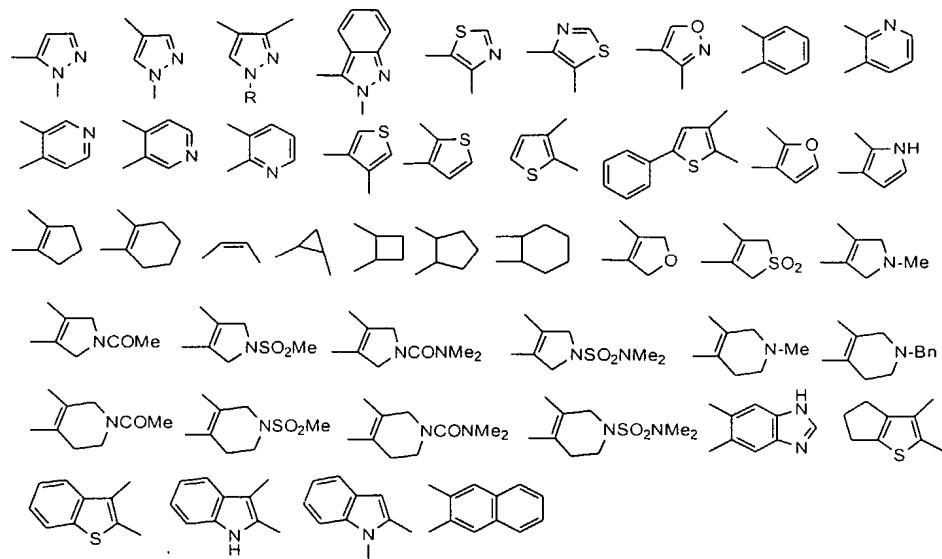
15 R^{1a} is a member selected from the group consisting of:

H, -F, -Cl and Br;

R^{1e} is a member selected from the group consisting of:

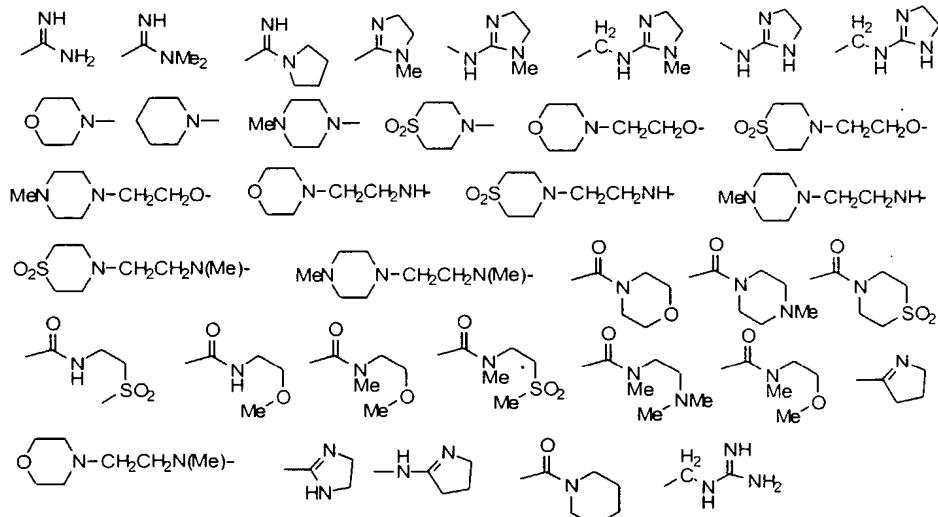
H, -F, -Cl, -Br, -OMe, -OH, -Me, -CF3 and -CH2NH2; and

G is a member selected from the group consisting of:

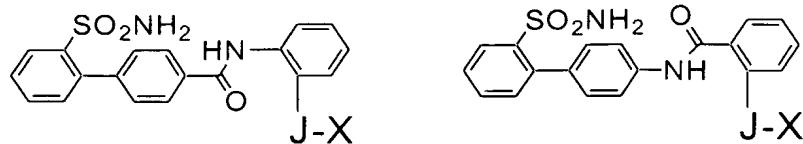


wherein each G group may be substituted by 0-4 R^{1d} groups and each such R^{1d} group is independently selected from the group consisting of:

5 H, -CH₃, -CF₃, -Cl, -F, -Br, -NH₂, -N(-Me)₂, -OH, -OMe, -NHSO₂Me, -NO₂,
 -CN, -C(=O)-OMe, -CO₂H, -C(=O)-NH₂, -SO₂NH₂, -SO₂CH₃,
 -NH-C(=O)-Me, -C(=O)-N(-Me)₂, -CH₂NH₂, -CH₂-N(-Me)₂, -CH₂OH,
 -OCH₂CO₂H, -OCH₂CO₂Me, -OCH₂C(=O)-NH₂, -OCH₂C(=O)-N(-Me)₂.



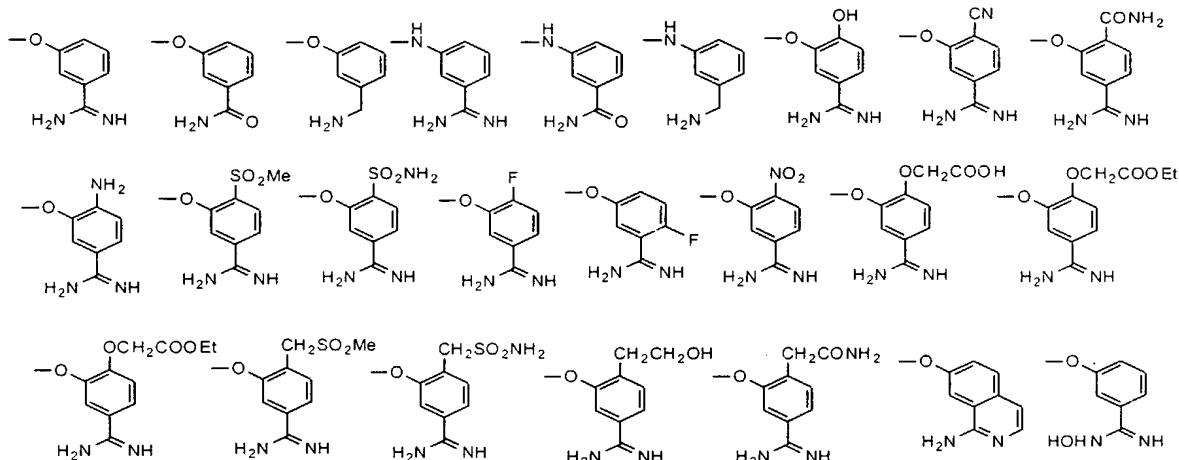
In another further preferred embodiment the present invention provides a compound according to the formula:



5

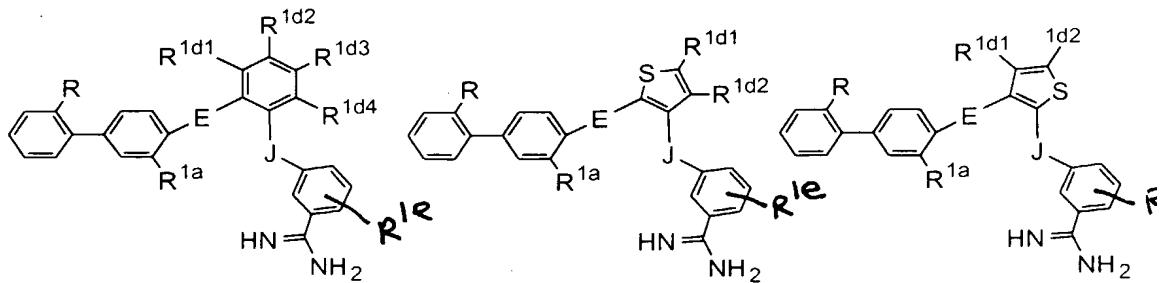
wherein:

J-X are collectively a member selected from the group consisting of:



10 and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In another further preferred embodiment the present invention provides a compound according to the formula:



wherein:

R is a member selected from the group of:

-SO₂NH₂, and -SO₂Me;

R^{1a} is a member selected from the group of:

5 H, -F, -Cl and Br;

E is a member selected from the group consisting of:

-NHC(=O)- and -C(=O)NH-;

J is a member selected from the group consisting of:

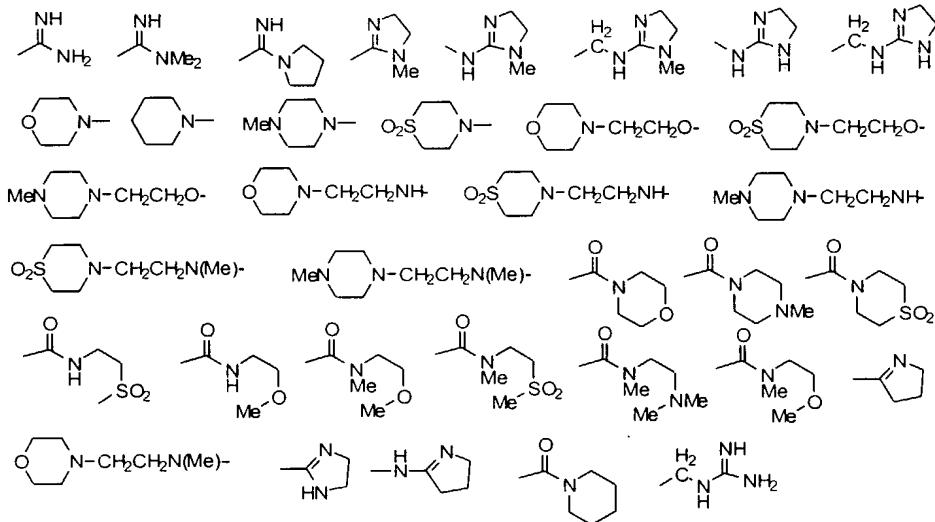
-NHC(=O)- and -C(=O)NH-, O;

10 R^{1d1}, R^{1d2}, and R^{1d4} are independently a member selected from the group of:

H, -F, -Cl, -Br, -Me, -NO₂, -OH, -OMe, -NH₂, -NHAc, -NHSO₂Me, -CH₂OH,
-CH₂NH₂;

R^{1d3} is a member selected from the group of:

15 H, -CH₃, -CF₃, -Cl, -F, -Br, -NH₂, -N(-Me)₂, -OH, -OMe, -NHSO₂Me, -NO₂,
-CN, -CO₂Me, -CO₂H, -C(=O)-NH₂, -SO₂NH₂, -SO₂CH₃, -NHC(=O)-Me,
-C(=O)-N(-Me)₂, -CH₂NH₂, -CH₂-N(-Me)₂, -CH₂OH, -OCH₂CO₂H,
-OCH₂C(=O)-OMe, -OCH₂C(=O)-NH₂, -OCH₂C(=O)-N(-Me)₂.

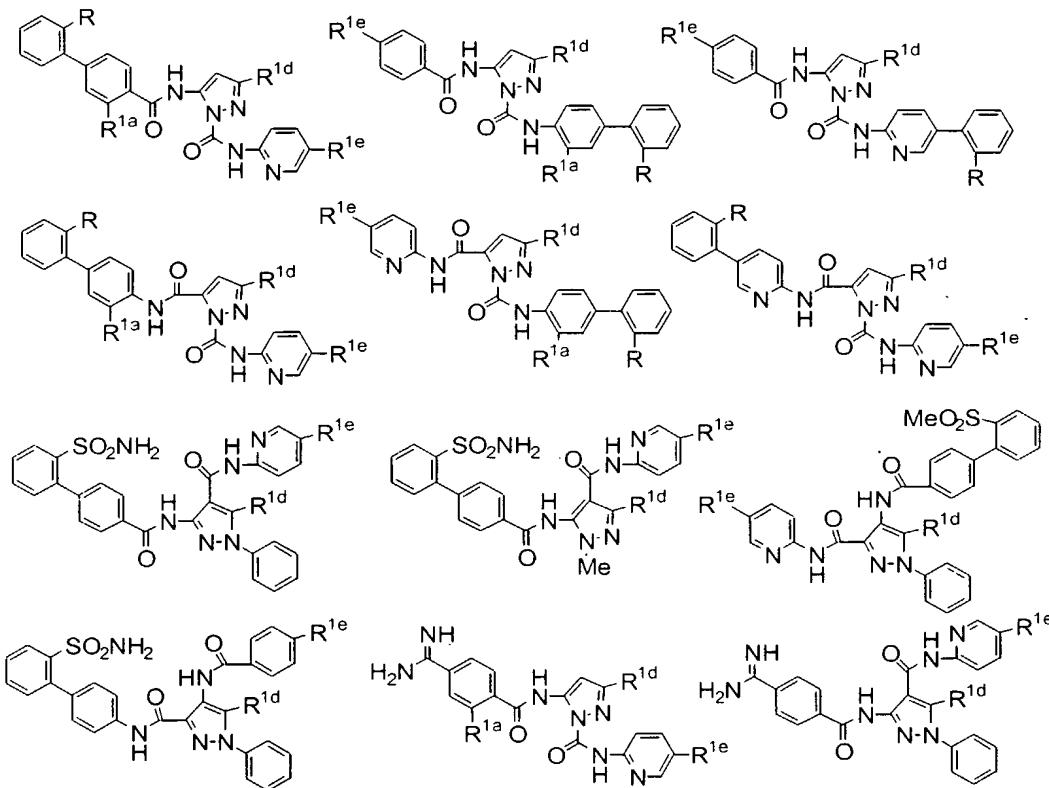


R^{1e} is a member selected from the group of:

20 F, -Cl, -Br, -OH, -Me and -OMe;

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In another preferred embodiment, the present invention provides a compound 5 of the following formulae, which illustrate the compounds having preferred substituents for G, particularly when G is a pyrazole ring structure.



wherein:

R is a member selected from the group of :

10 -SO₂-NH₂, and -SO₂Me;

R^{1a} is a member selected from the group of:

H, -F, -Cl and Br;

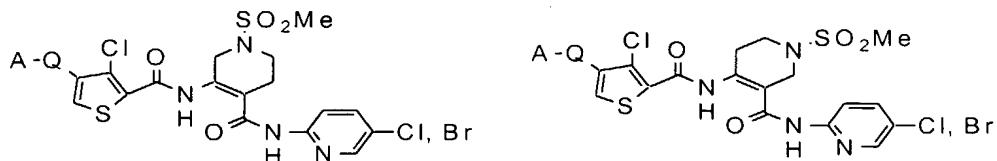
R^{1d} is a member selected from the group consisting of:

-H, -CH₃, -CF₃, -CN, -SO₂NH₂ and -SO₂CH₃; and

15 R^{1e} is a member selected from the group of:

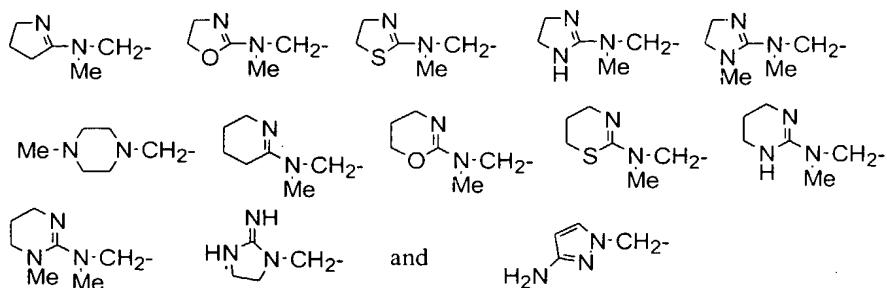
-Cl and -Br;
and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

5 In another preferred embodiment, the present invention provides a compound of the following formulae, which illustrate the compounds having preferred substituents for A-Q taken collectively when the remainder of the compound structure has the one of the following two formulae:



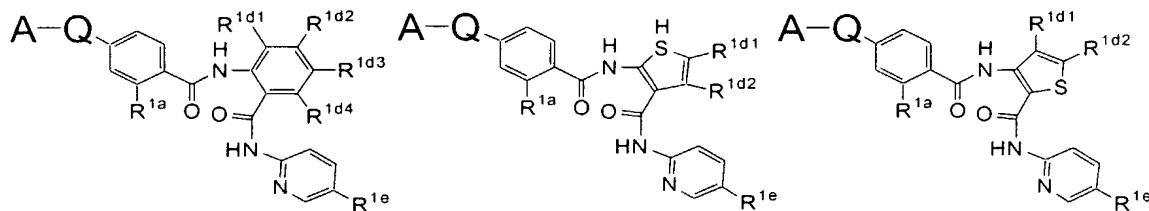
10 wherein:

A-Q taken together are a member selected from the group consisting of:



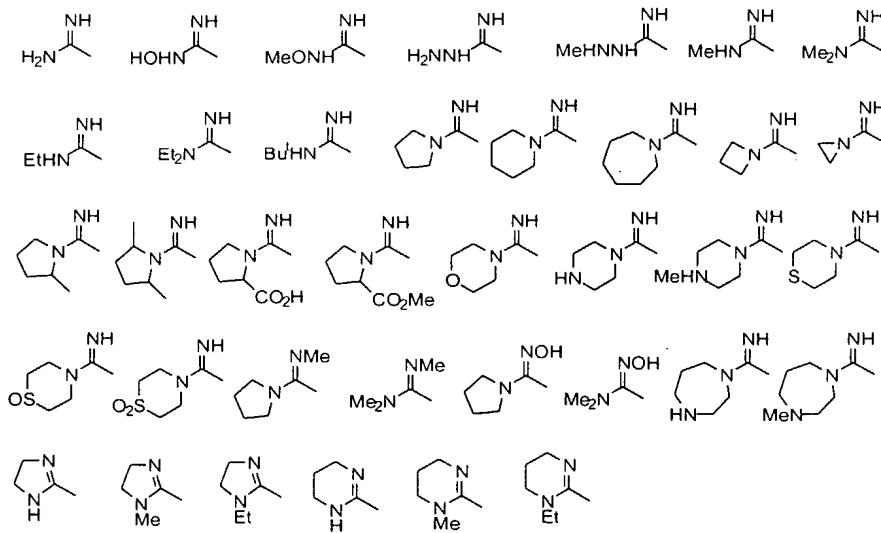
15 and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In another preferred embodiment the present invention provides a compound according to the formula:



wherein:

A-Q is a member selected from the group of :



5 where A-Q may optionally be further substituted with at least one Z' group, where each Z' group is independently a C₁-C₆ alkyl, preferably a C₁-C₃ alkyl group, most preferably a methyl group and where each Z' group may optionally be substituted with a hydroxyl, carboxylic acid or carboxylic acid C₁-C₆ ester group, preferably a hydroxyl, carboxylic acid or carboxylic acid C₁-C₃ ester group, and most preferably, a
10 hydroxyl, carboxylic acid or carboxylic acid methyl ester;

R^{1a} is a member selected from the group of:

H, -F, -Cl and Br;

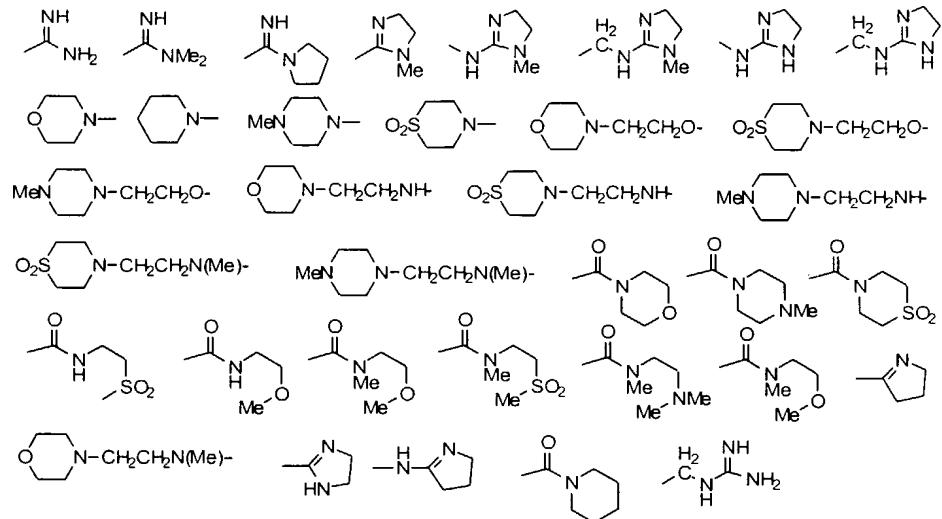
R^{1d1}, R^{1d2}, and R^{1d4} are independently a member selected from the group of:

15 H, -F, -Cl, -Br, -Me, -NO₂, -OH, -OMe, -NH₂, -NHOAc, -NHSO₂Me, -CH₂OH, -CH₂NH₂

R^{1d3} is a member selected from the group of:

H, -CH₃, -CF₃, -Cl, -F, -Br, -NH₂, -N(-Me)₂, -OH, -OMe, -NHSO₂Me, -NO₂, -CN, -C(=O)-OMe, -CO₂H, -C(=O)-NH₂, -SO₂NH₂, -SO₂CH₃, -NHC(=O)-Me,

-C(=O)-N(Me)₂, -CH₂NH₂, -CH₂-N(-Me)₂, -CH₂OH, -OCH₂CO₂H,
 -OCH₂C(=O)-OMe, -OCH₂C(=O)-NH₂, -OCH₂C(=O)-N(-Me)₂,



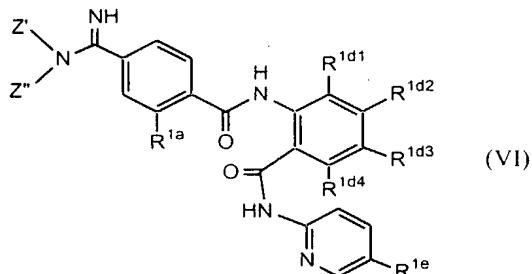
R^{1c} is a member selected from the group of:

5

F, -Cl, -Br, -OH, -Me and -OMe;

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In another embodiment, the invention provides a compound of formula VI:



10

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

In formula VI:

Z' and Z" are each independently a C₁-C₆ alkyl, preferably a C₁-C₃ alkyl group, most preferably a methyl group; where Z' and Z" may be optionally substituted with a hydroxyl, carboxylic acid or carboxylic acid C₁-C₆ ester group, preferably a hydroxyl, carboxylic acid or carboxylic acid C₁-C₃ ester group, and most preferably, a hydroxyl, 5 carboxylic acid or carboxylic acid methyl ester;

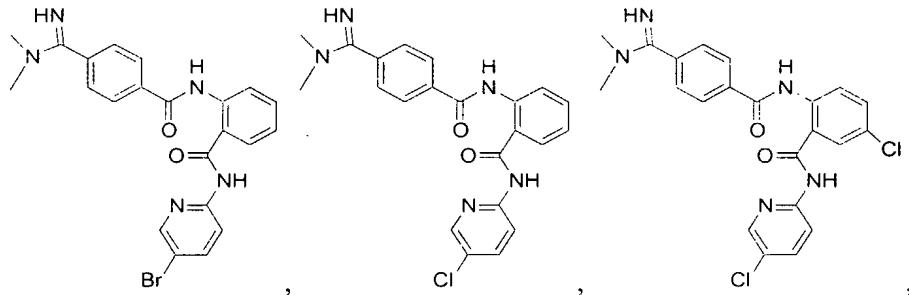
R^{1a} is a member selected from the group of H, -F, -Cl and Br;

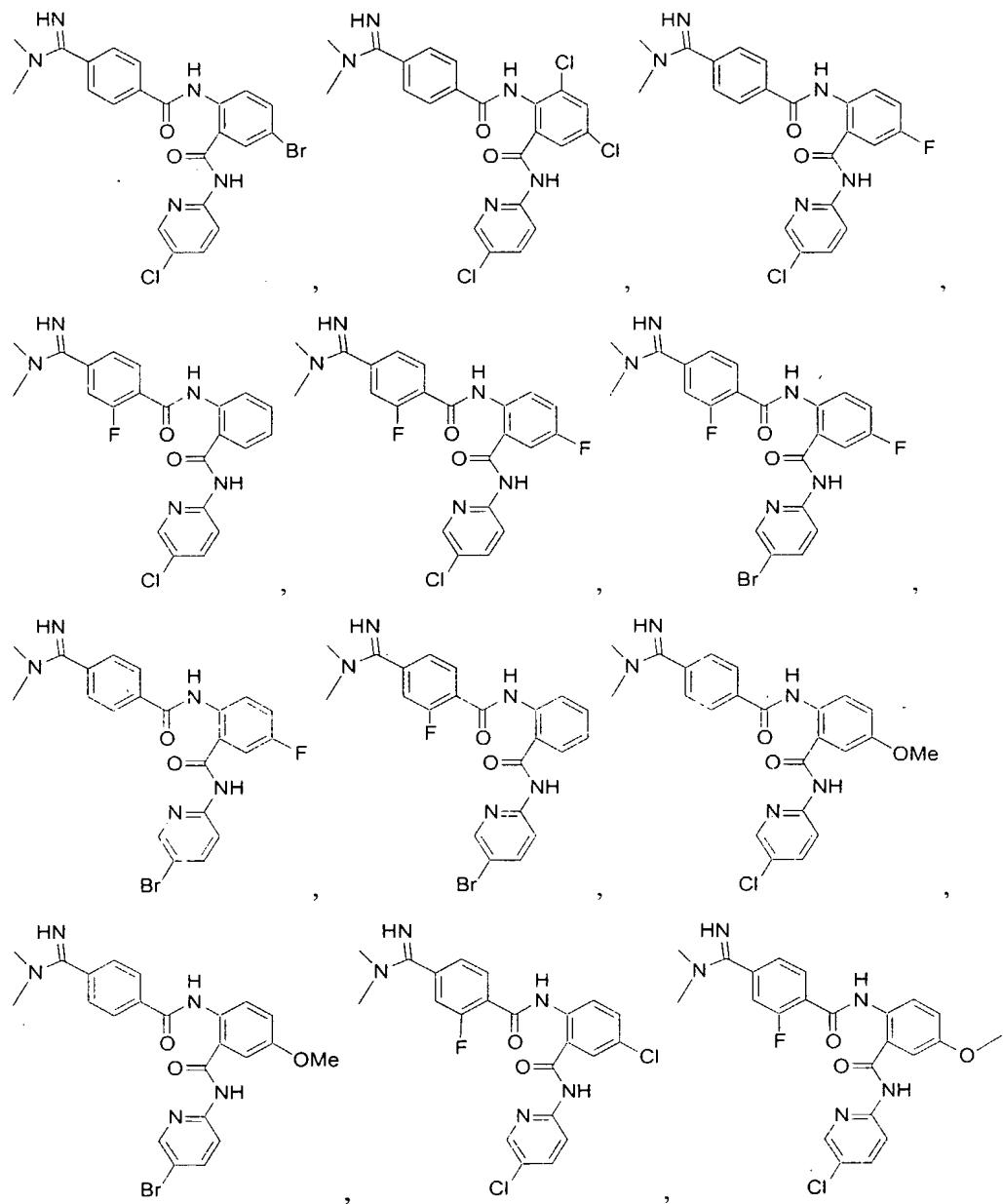
R^{1d2} and R^{1d4} are each H;

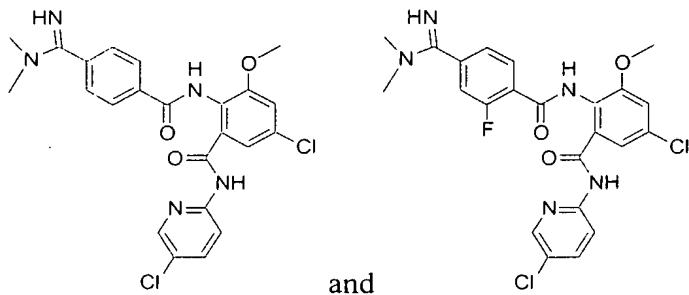
R^{1d1} and R^{1d3} are each independently a member selected from the group of H, 10 -Cl, -F, -Br, -OH and -OMe; and

R^{1e} is a member selected from the group of -F, -Cl, -Br, -OH, -Me and -OMe.

Examples of suitable compounds of formula VI, as described above, include, but are not limited to:

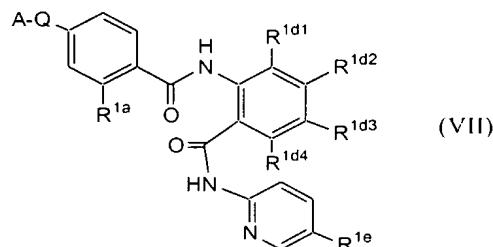






and

In another embodiment, the invention further provides a compound of formula VII:



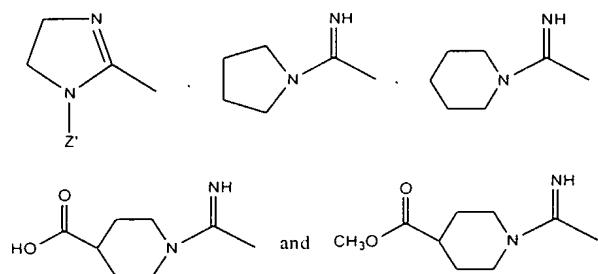
5

and all pharmaceutically acceptable isomers, salts, hydrates and solvates and prodrug derivatives thereof.

In formula VII:

10

A-Q is a member selected from the group of:



where Z' is as described above;

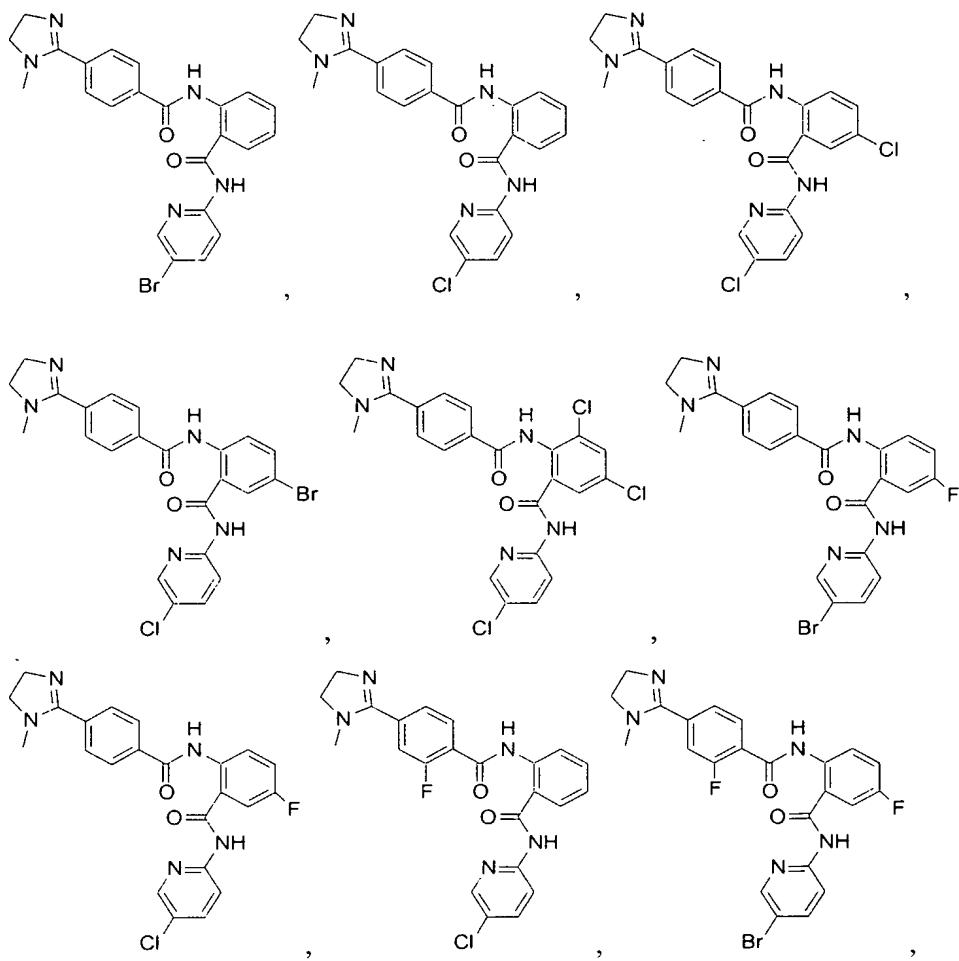
R^{1a} is a member selected from the group of H, -F, -Cl and Br;

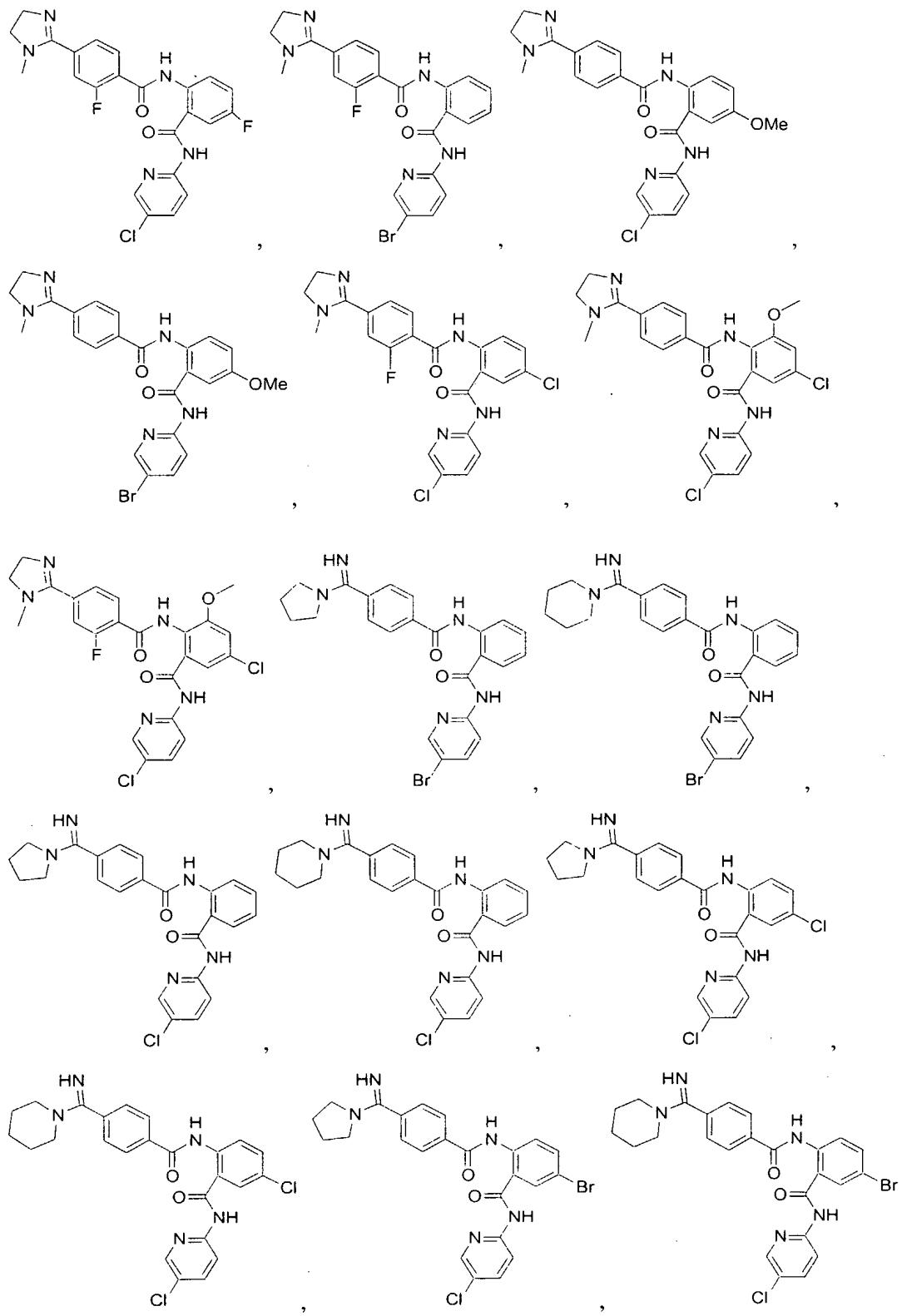
R^{1d2} and R^{1d4} are each H;

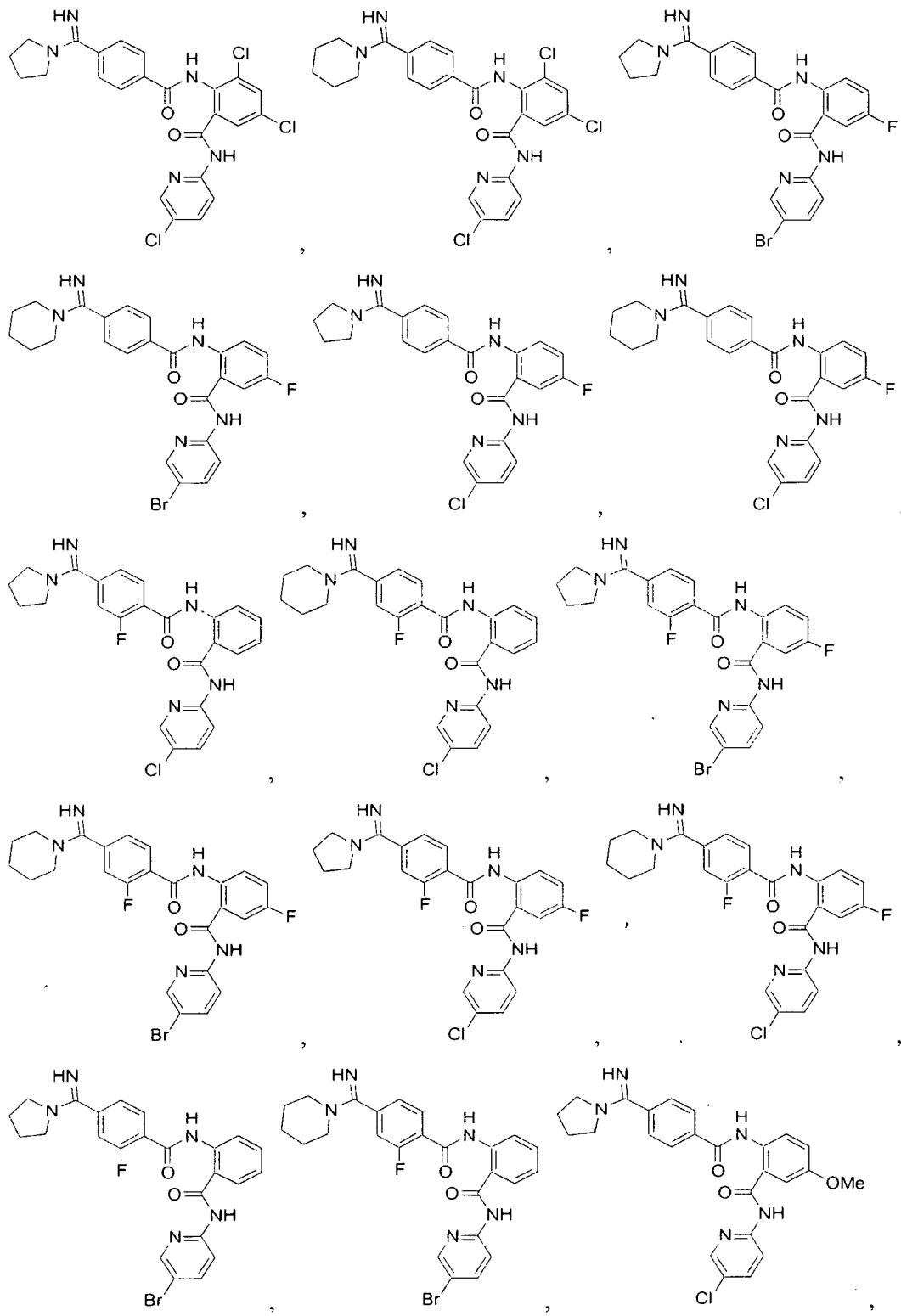
R^{1d1} is R^{1d3} are each independently a member selected from the group of H, -Cl, -F, -Br, -OH and -OMe;

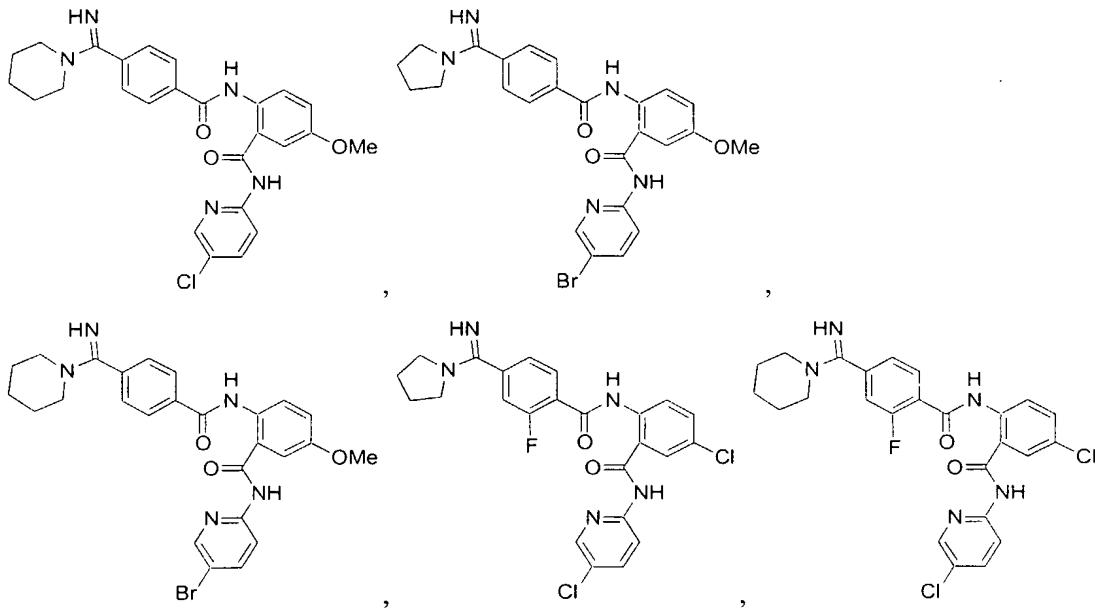
5 R^{1e} is a member selected from the group of -F, -Cl, -Br, -OH, -Me and -OMe.

Examples of suitable compounds of formula VII, as described above, include, but are not limited to:

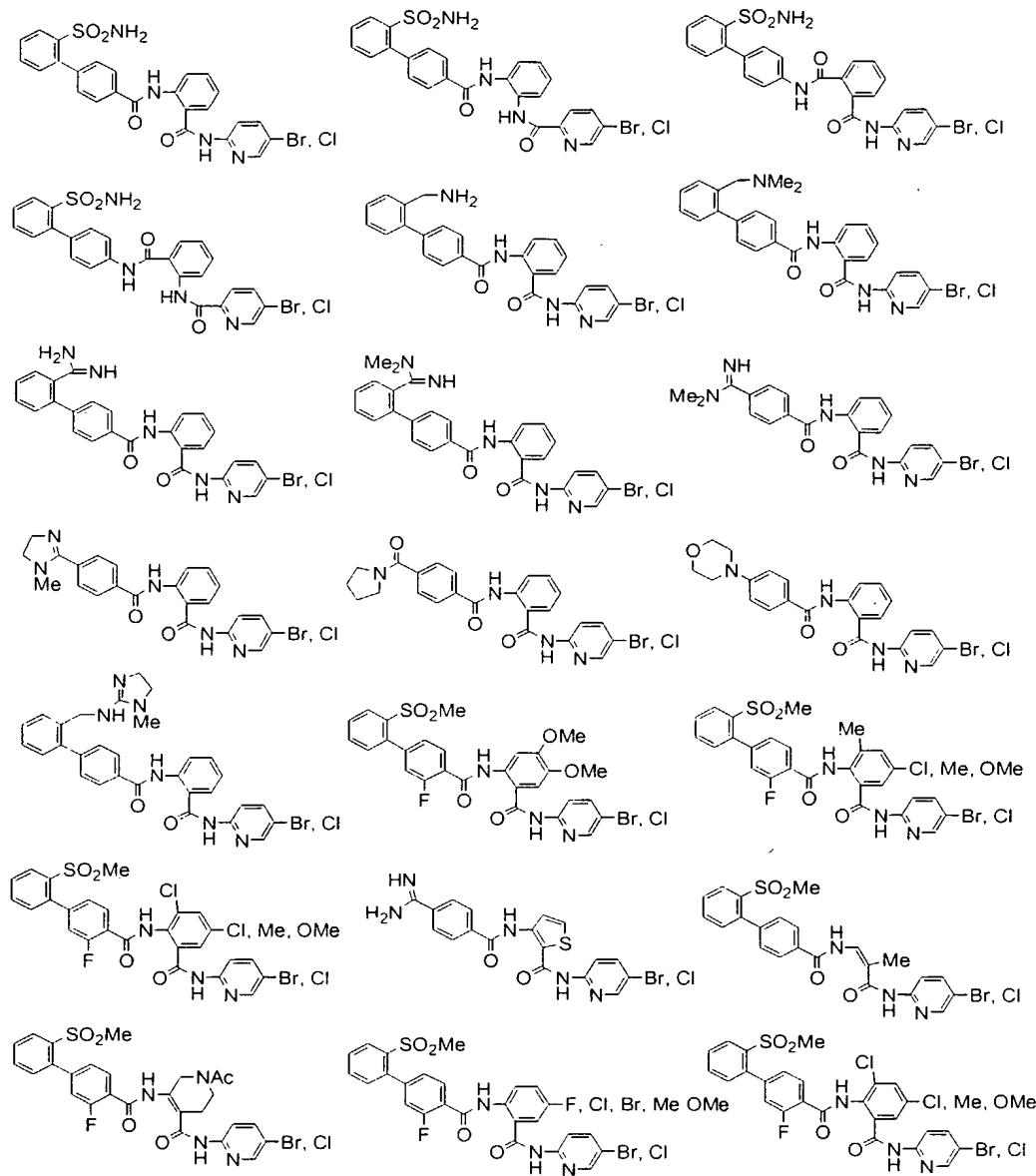








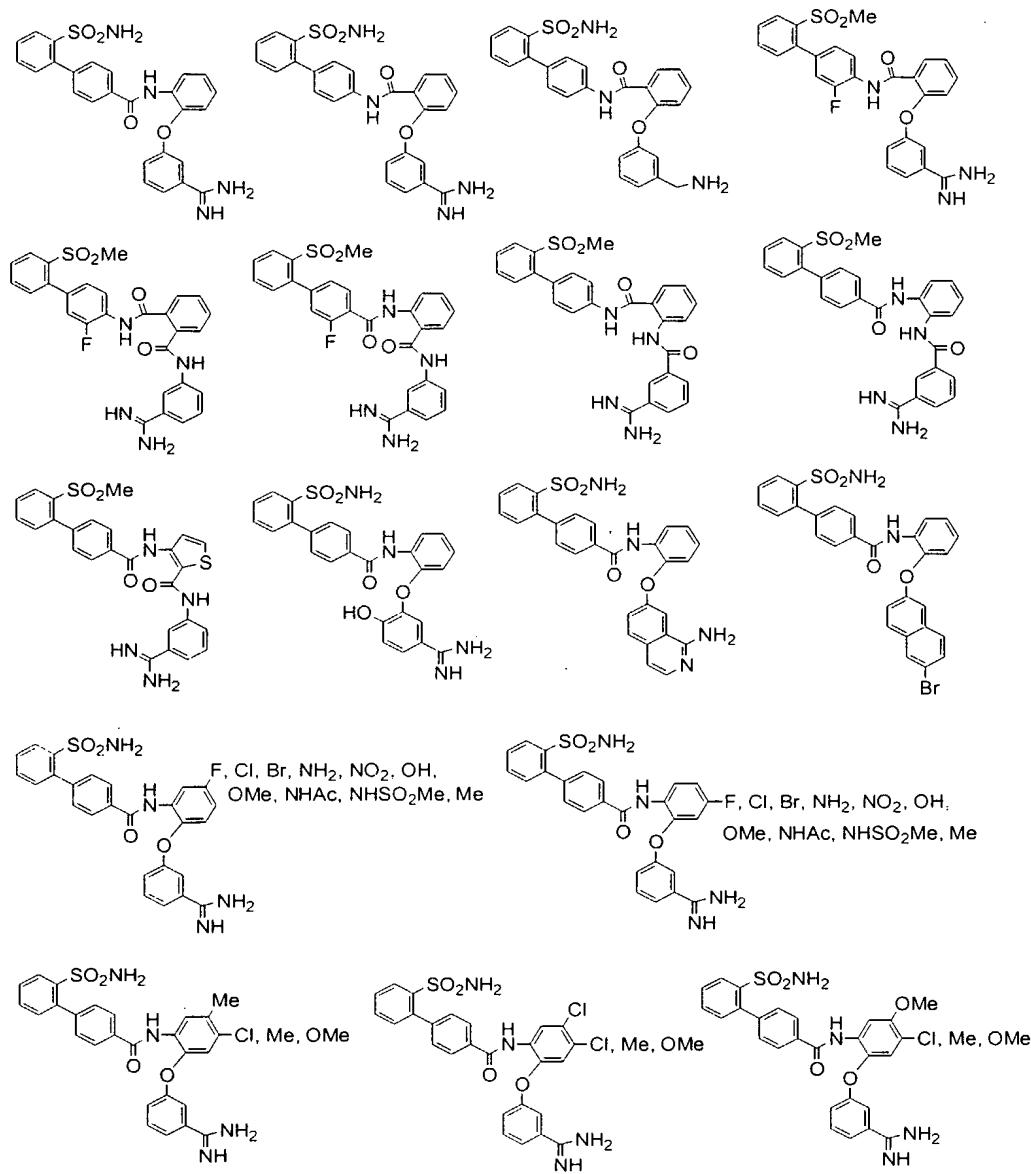
In another further preferred embodiment the present invention provides the following compounds:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

5.

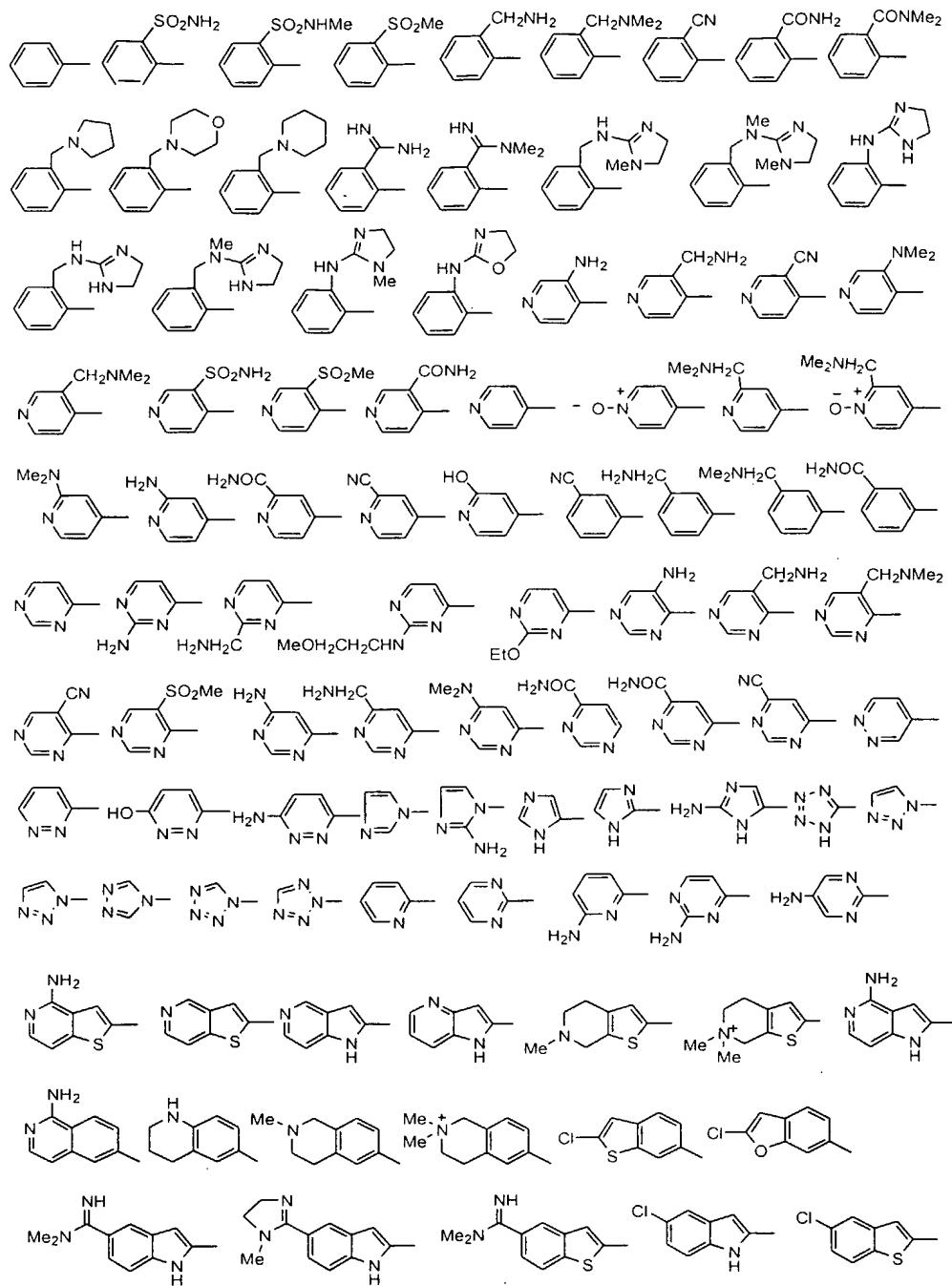
In another further preferred embodiment the present invention provides the following compounds:

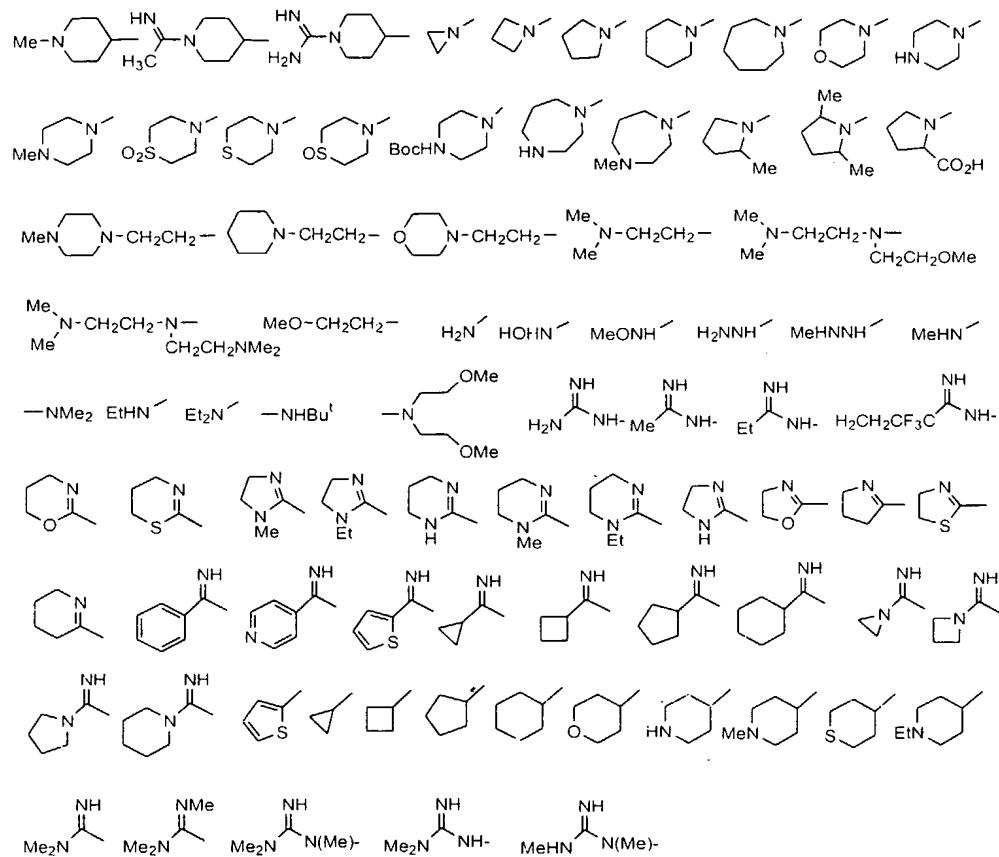


and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

The invention also provides compounds of formula Ib, as set forth above, wherein:

A is a member selected from the group consisting of:

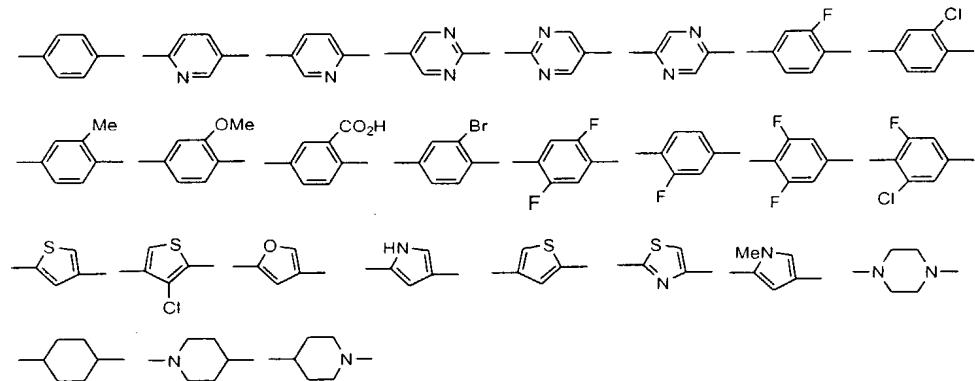




Q is a member selected from the group consisting of:

a direct link, -CH₂-, -C(=O)-, -NH-, -N(Me)-, -NHCH₂-, -N(Me)CH₂-,
 5 -C(=NH)-, -C(=NMe)-;

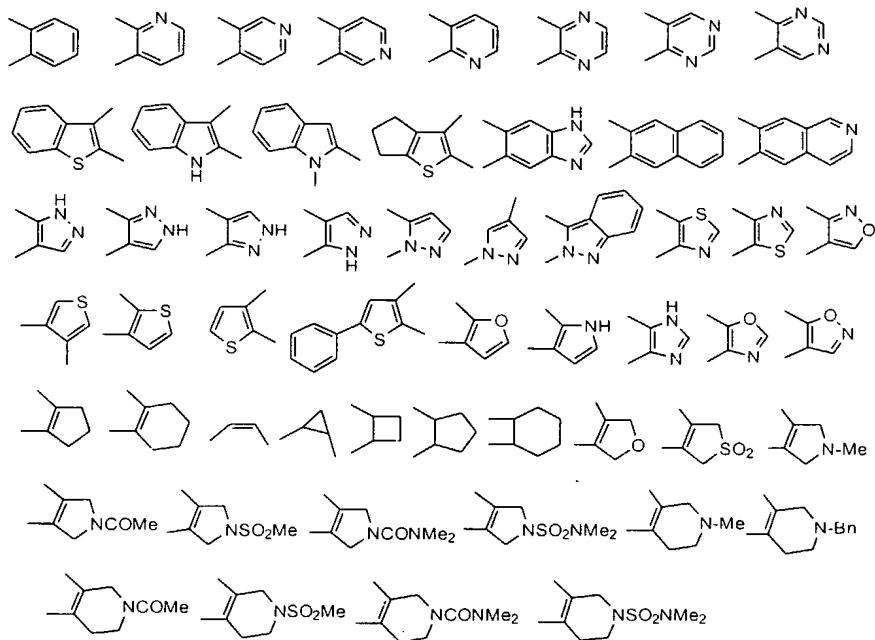
D is a direct link or is a member selected from the group consisting of:



E is a member selected from the group consisting of:

a direct link, -CH₂NH-, -NHCH₂-, -CH₂O-, -OCH₂-, -CH₂NH-, -CONH-, -NHCO-, -CONMe-, -NMeCO-;

5 G is a member selected from the group consisting of:



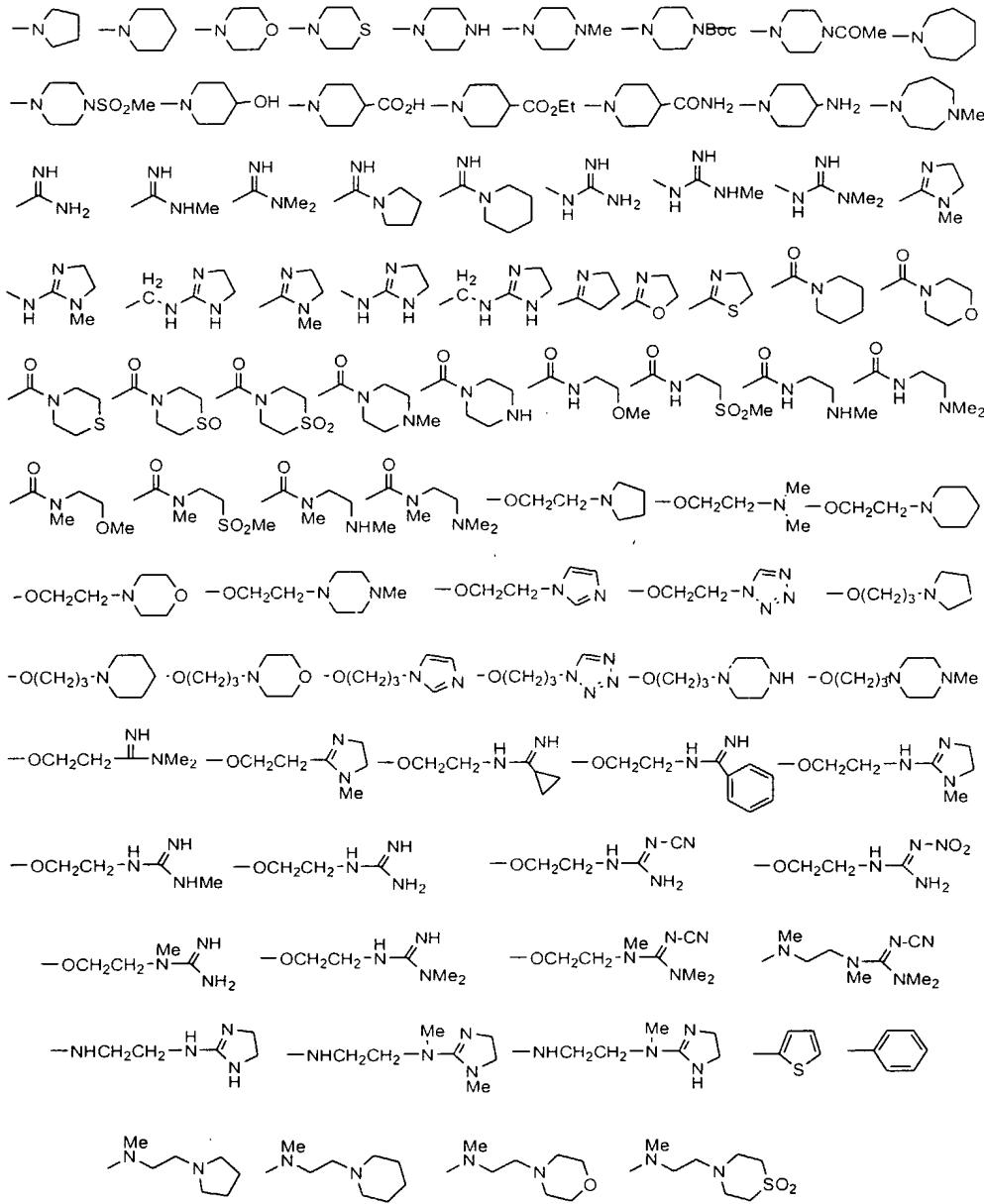
G is substituted by 0-4 R^{1d} groups and each R^{1d} group is independently selected from the group consisting of:

10 H, -Me, -F, -Cl, -Br, aryl, heteroaryl, -NH₂, -NMe₂, -NHMe, -NHSO₂Me, -NHCOMe, -CH₃, -CF₃, -OH, -OCH₃, -SCH₃, -OCF₃, -OCH₂F, -OCHF₂, -OCH₂CF₃, -OCF₂CF₃, -NO₂, -CN, -CO₂H, -CO₂Me, -CO₂Et, -CONH₂, -CONHMe, -CONMe₂, -SO₂NH₂, -SO₂CH₃, -SO₂NMe₂, -CH₂OH, -CH₂NH₂, -CH₂NHMe, -CH₂NMe₂, -OCH₂CO₂H, -OCH₂CO₂Me, -OCH₂CO₂Et, -OCH₂CONH₂, -OCH₂CONMe₂, -OCH₂CONHMe, -OCH₂CH₂OMe, -OCH₂CH₂OEt, -OCH₂CH₂NH₂, -OCH₂CH₂NHMe, -OCH₂CH₂NMe₂, -N(CH₂CH₂OH)₂, -N(CH₂CH₂OMe)₂, -NHCH₂CO₂H, -NHCH₂CO₂Et, -NHCH₂CO₂Et, -NHCH₂CONH₂, -NHCH₂CONMe₂, -NHCH₂CONHMe, -N(CH₃)CH₂CO₂H,

15

-N(CH₃)CH₂CO₂Et, -(NMe)CH₂COOH, -N(Me)CH₂CONH₂, -

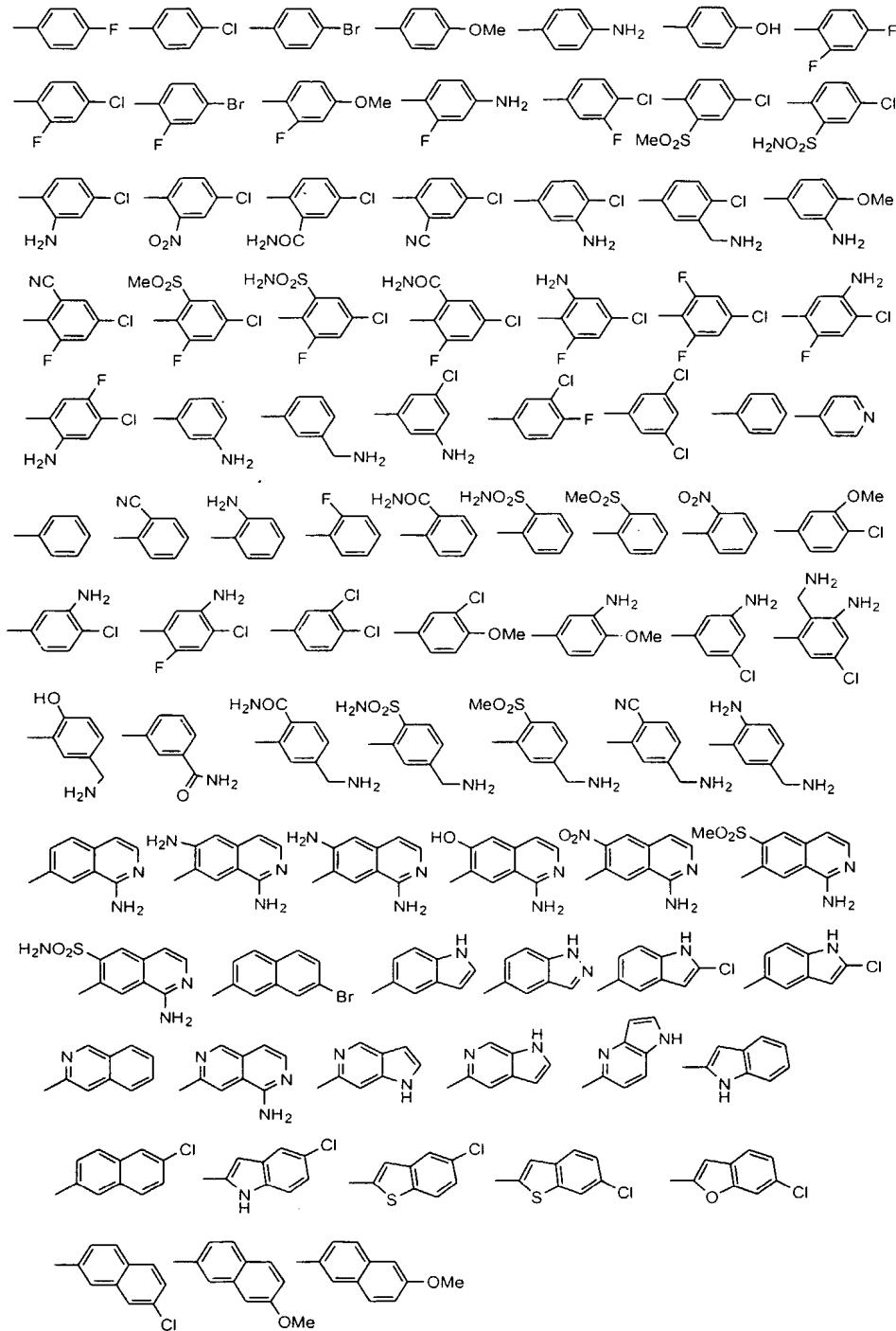
N(Me)CH₂CH₂NMe₂, -N(Me)CH₂CH₂OMe, -NHCH₂CH₂OMe,

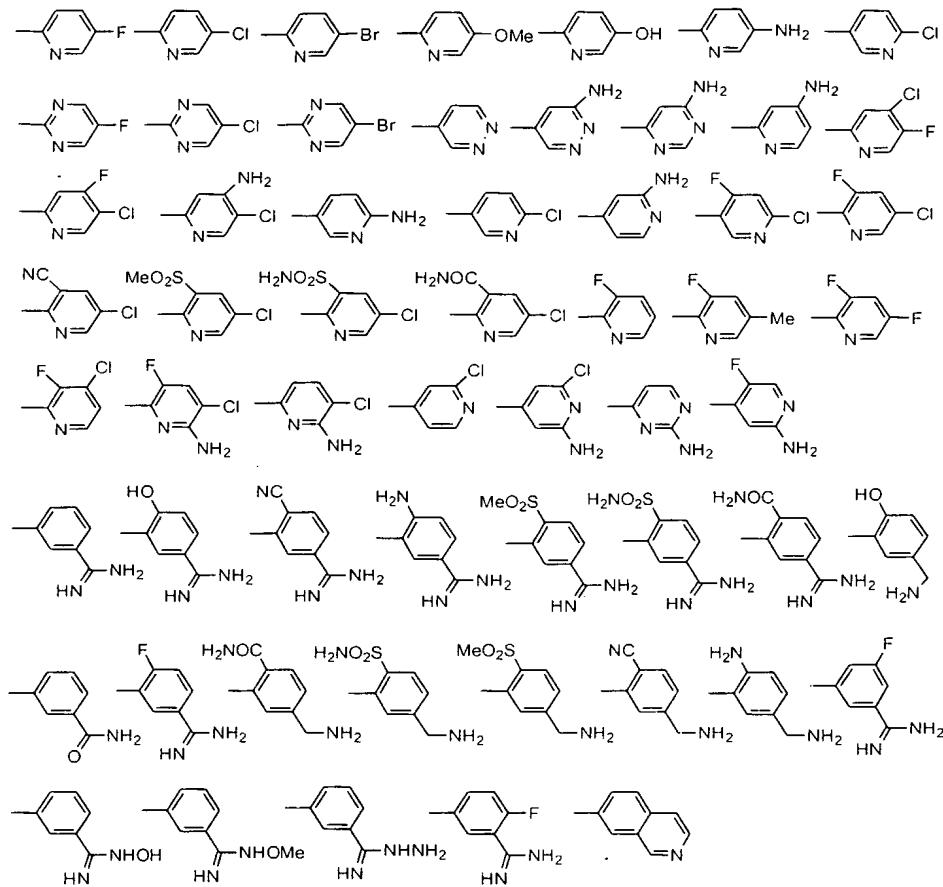


5 J is a member selected from the group consisting of:

a direct link, -SO₂-, -CO-, -O-, -NH-, -C(=O)-NH- and -NH-C(=O)-;

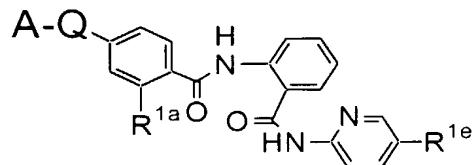
X is a member selected from the group consisting of:





and all pharmaceutically acceptable isomers, salts, hydrates and prodrug derivatives thereof.

The invention provides compound of formula Ib, as described above, having the following structure:



10 where:

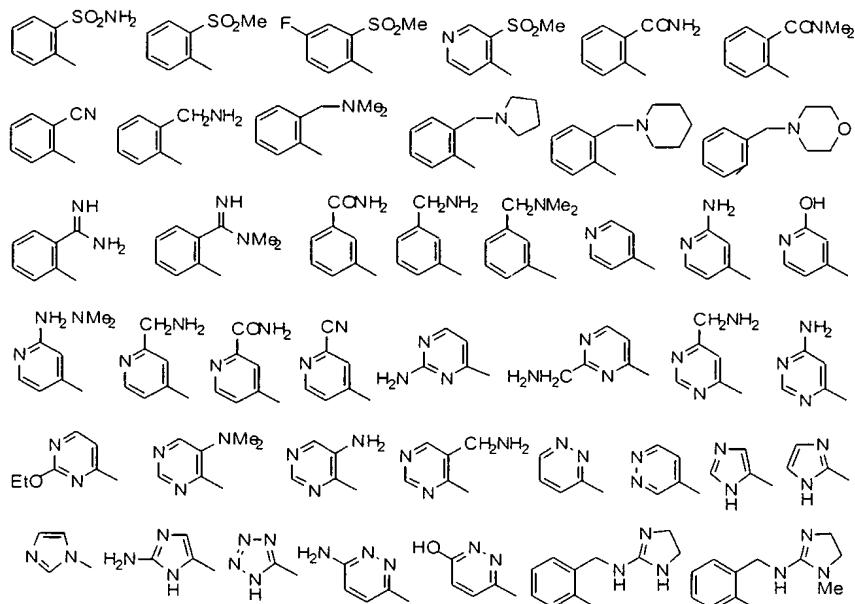
R^{1a} is a member selected from the group consisting of:

H, -F, -Cl and -Br;

R^{1e} is a member selected from the group consisting of:

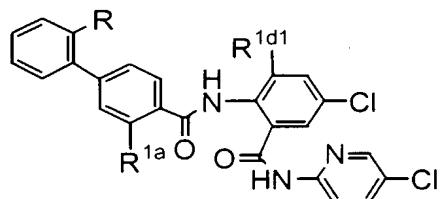
H, -F, -Cl, -Br, -OMe, -OH, -Me, -CF₃ and -CH₂NH₂; and

A-Q is a member selected from the group consisting of:



5 and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

The invention provides compound of formula Ib, having the following structure:



10

wherein:

R is a member selected from the group consisting of:

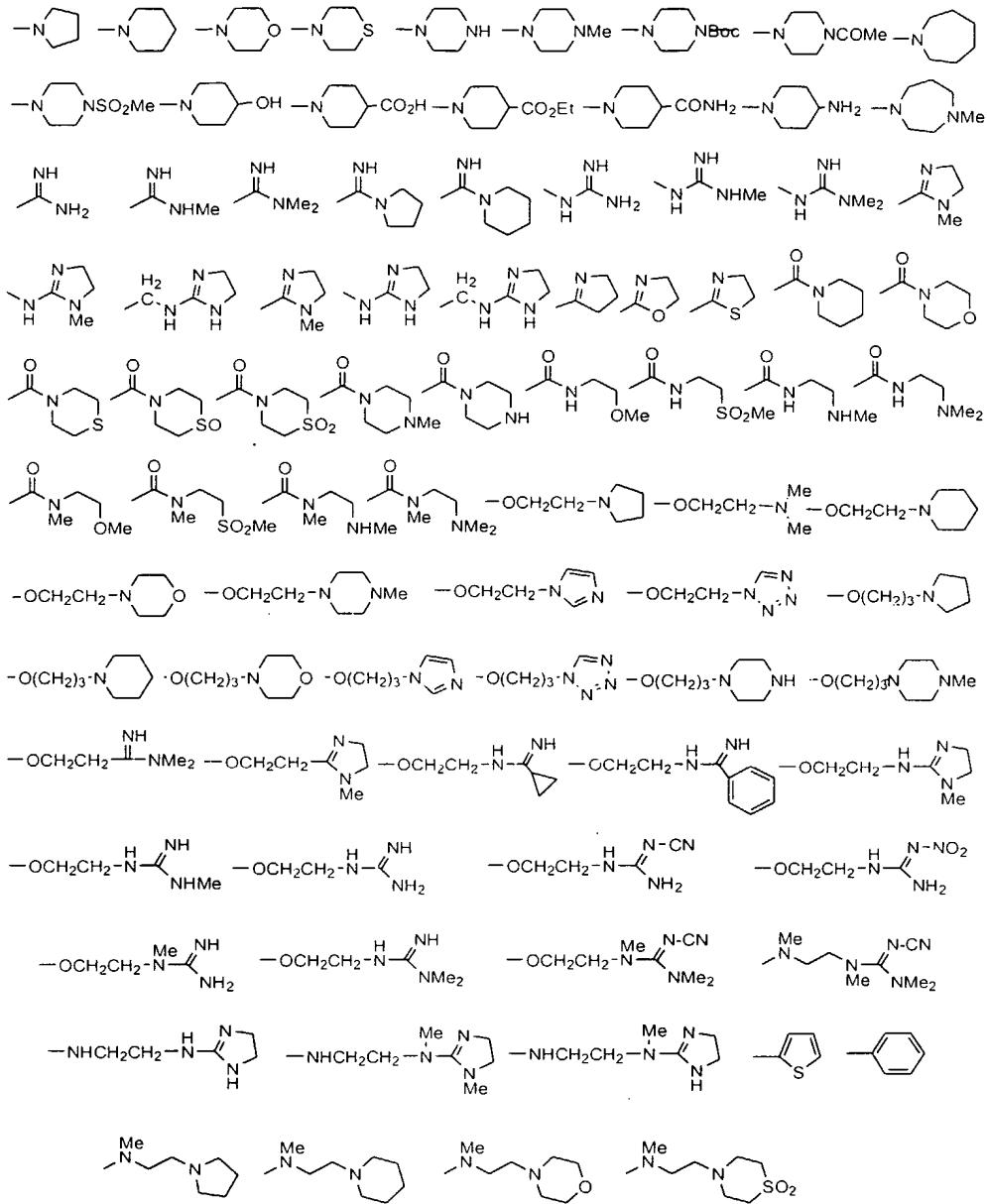
-SO₂Me, -SO₂NH₂, -CH₂NH₂, -CH₂N(CH₃)₂;

R^{1a} is a member selected from the group consisting of:

15 H, -F;

R^{1d1} is a member selected from the group consisting of:

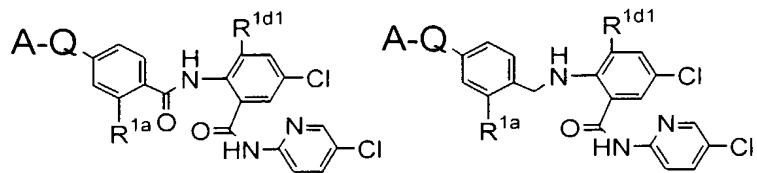
H, -Me, -F, -Cl, -Br, aryl, heteroaryl, -NH₂, -NMe₂, -NHMe, -NHSO₂Me,
-NHCOMe, -CH₃, -CF₃, -OH, -OCH₃, -SCH₃, -OCF₃, -OCH₂F, -OCHF₂, -
OCH₂CF₃, -OCF₂CF₃, -NO₂, -CN, -CO₂H, -CO₂Me, -CO₂Et, -CONH₂,
-CONHMe, -CONMe₂, -SO₂NH₂, -SO₂CH₃, -SO₂NMe₂, -CH₂OH, -CH₂NH₂,
-CH₂NHMe, -CH₂NMe₂, -OCH₂CO₂H, -OCH₂CO₂Me, -OCH₂CO₂Et,
-OCH₂CONH₂, -OCH₂CONMe₂, -OCH₂CONHMe, -OCH₂CH₂OMe,
-OCH₂CH₂OEt, -OCH₂CH₂NH₂, -OCH₂CH₂NHMe, -OCH₂CH₂NMe₂,
-NHCH₂CH₂OMe, -SCH₂CH₂OMe, -SO₂CH₂CH₂OMe, -OCH₂CH₂SO₂Me,
-NHCH₂CH₂NHMe, -NHCH₂CH₂NMe₂, -N(CH₂CH₂OH)₂, -
10 N(CH₂CH₂OMe)₂, -NHCH₂CO₂H, -NHCH₂CO₂Et, -NHCH₂CO₂Et,
-NHCH₂CONH₂, -NHCH₂CONMe₂, -NHCH₂CONHMe, -N(CH₃)CH₂CO₂H,
-N(CH₃)CH₂CO₂Et, -(NMe)CH₂COOH, -N(Me)CH₂CONH₂, -
N(Me)CH₂CH₂NMe₂, -N(Me)CH₂CH₂OMe, -NHCH₂CH₂OMe,



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

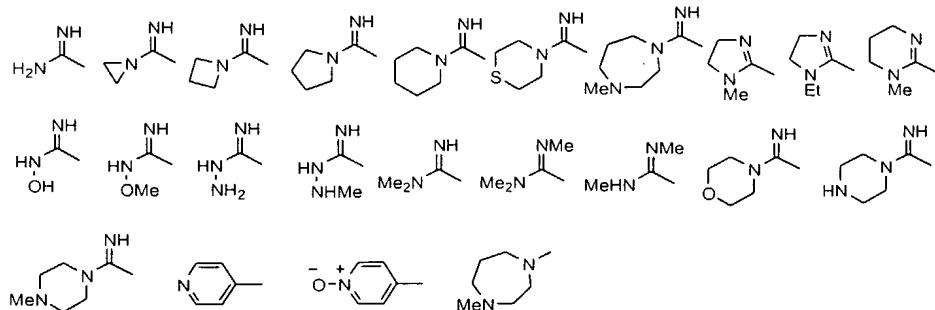
5

The invention provides compound of formula Ib, as described above, having the following structure:



wherein:

A-Q is a member selected from the group consisting of:



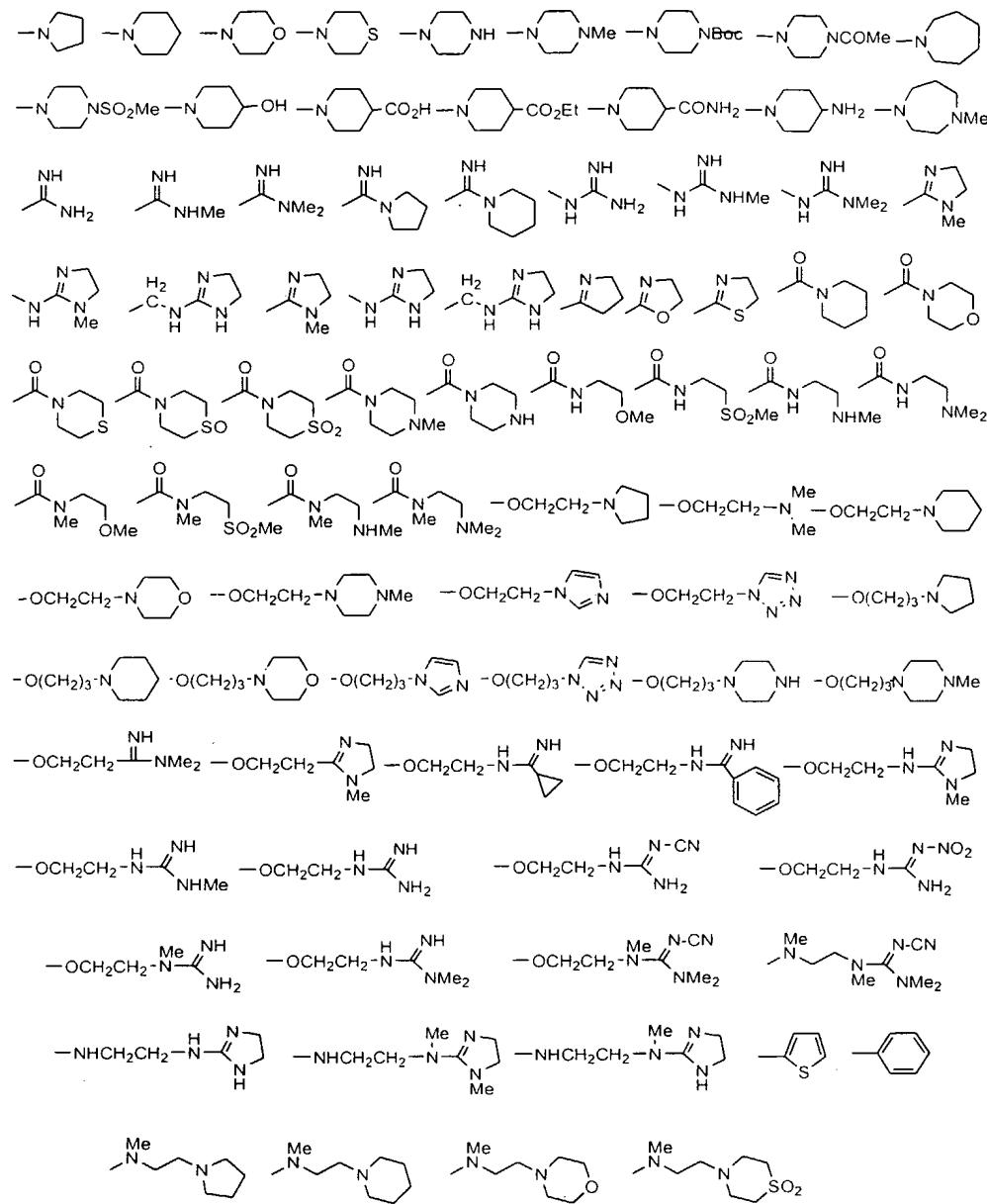
5 R^{1a} is a member selected from the group consisting of:

H, -F;

R^{1d1} is a member selected from the group consisting of:

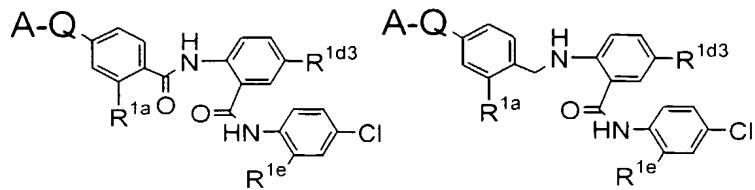
H, -Me, -F, -Cl, -Br, aryl, heteroaryl, -NH₂, -NMe₂, -NHMe, -NHSO₂Me, -NHCOMe, -CH₃, -CF₃, -OH, -OCH₃, -SCH₃, -OCF₃, -OCH₂F, -OCHF₂,

10 OCH₂CF₃, -OCF₂CF₃, -NO₂, -CN, -CO₂H, -CO₂Me, -CO₂Et, -CONH₂,
 -CONHMe, -CONMe₂, -SO₂NH₂, -SO₂CH₃, -SO₂NMe₂, -CH₂OH, -CH₂NH₂,
 -CH₂NHMe, -CH₂NMe₂, -OCH₂CO₂H, -OCH₂CO₂Me, -OCH₂CO₂Et,
 -OCH₂CONH₂, -OCH₂CONMe₂, -OCH₂CONHMe, -OCH₂CH₂OMe,
 -OCH₂CH₂OEt, -OCH₂CH₂NH₂, -OCH₂CH₂NHMe, -OCH₂CH₂NMe₂,
 15 -NHCH₂CH₂OMe, -SCH₂CH₂OMe, -SO₂CH₂CH₂OMe, -OCH₂CH₂SO₂Me,
 -NHCH₂CH₂NHMe, -NHCH₂CH₂NMe₂, -N(CH₂CH₂OH)₂, -
 N(CH₂CH₂OMe)₂, -NHCH₂CO₂H, -NHCH₂CO₂Et, -NHCH₂CO₂Et,
 -NHCH₂CONH₂, -NHCH₂CONMe₂, -NHCH₂CONHMe, -N(CH₃)CH₂CO₂H,
 -N(CH₃)CH₂CO₂Et, -(NMe)CH₂COOH, -N(Me)CH₂CONH₂, -
 20 N(Me)CH₂CH₂NMe₂, -N(Me)CH₂CH₂OMe, -NHCH₂CH₂OMe,



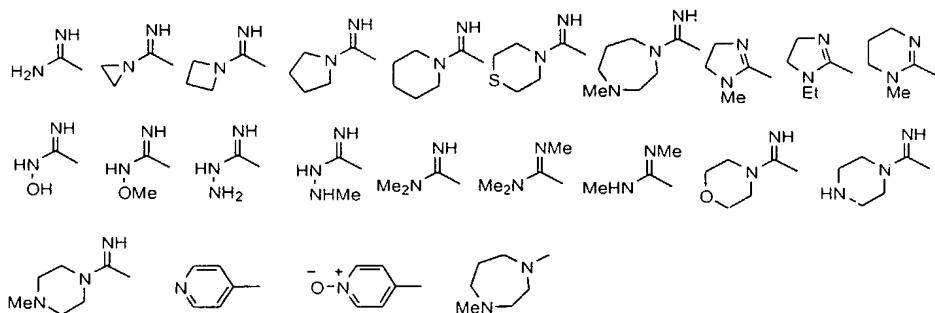
and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

The invention provides compound of formula Ib, as described above, having the following structure:



wherein:

A-Q is a member selected from the group consisting of:



5 R^{1a} is a member selected from the group consisting of:

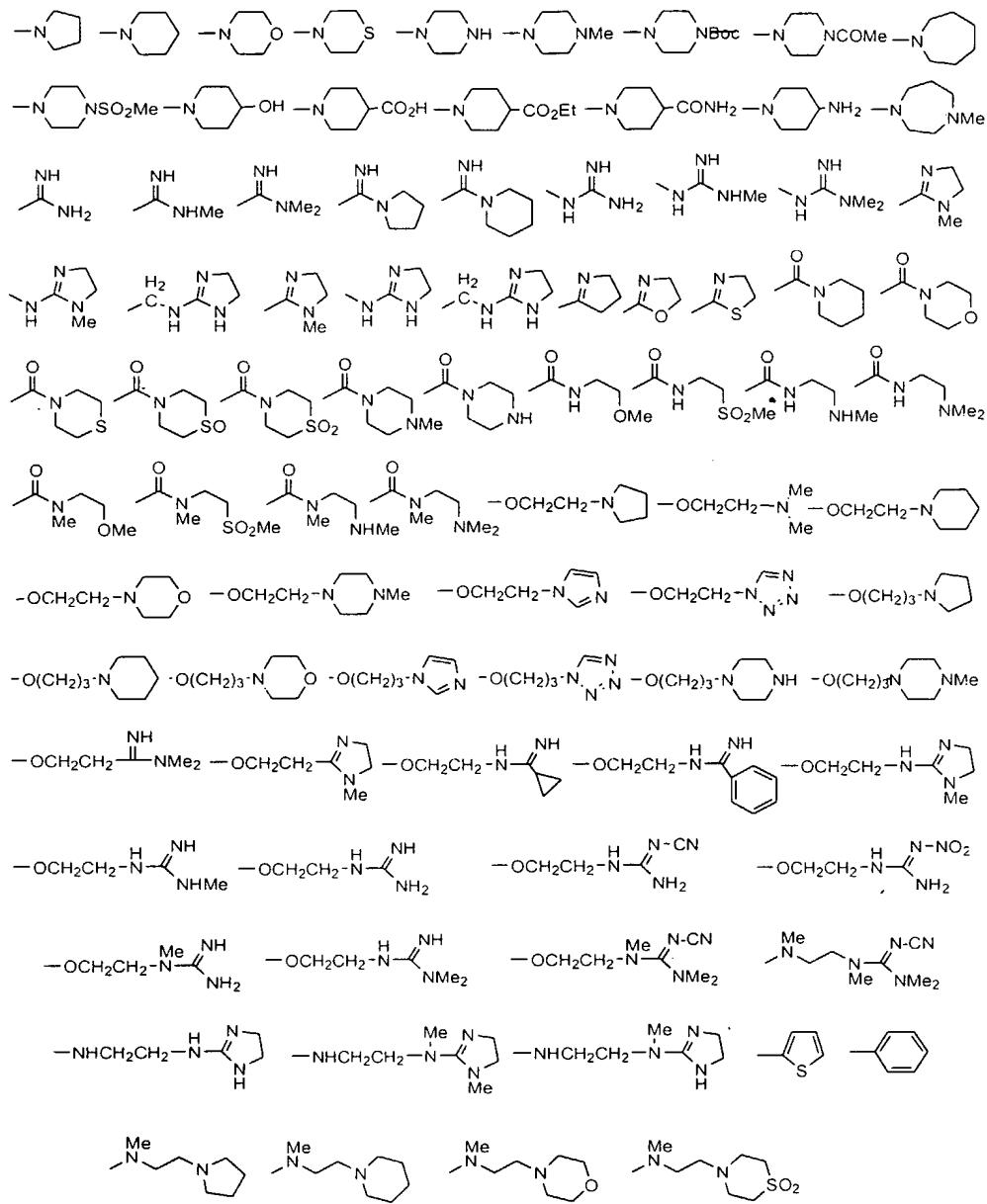
H, -F;

R^{1e} is a member selected from the group consisting of:

H, -F, -SO₂Me, -SO₂NH₂, -CN, -CONH₂, -CH₂NH₂, -CH₂NMe₂;

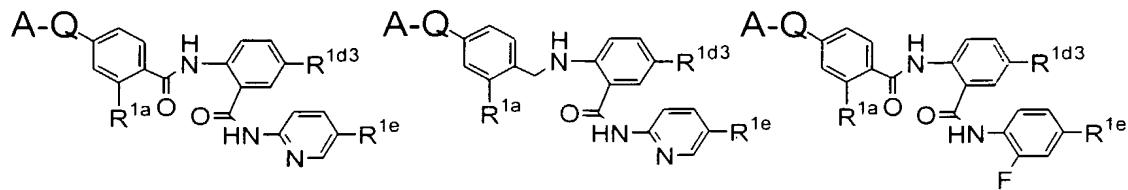
R^{1d3} is a member selected from the group consisting of:

10	H, -Me, -F, -Cl, -Br, aryl, heteroaryl, -NH ₂ , -NMe ₂ , -NHMe, -NHSO ₂ Me, -NHCOMe, -CH ₃ , -CF ₃ , -OH, -OCH ₃ , -SCH ₃ , -OCF ₃ , -OCH ₂ F, -OCHF ₂ , -OCH ₂ CF ₃ , -OCF ₂ CF ₃ , -NO ₂ , -CN, -CO ₂ H, -CO ₂ Me, -CO ₂ Et, -CONH ₂ , -CONHMe, -CONMe ₂ , -SO ₂ NH ₂ , -SO ₂ CH ₃ , -SO ₂ NMe ₂ , -CH ₂ OH, -CH ₂ NH ₂ , -CH ₂ NHMe, -CH ₂ NMe ₂ , -OCH ₂ CO ₂ H, -OCH ₂ CO ₂ Me, -OCH ₂ CO ₂ Et, -OCH ₂ CONH ₂ , -OCH ₂ CONMe ₂ , -OCH ₂ CONHMe, -OCH ₂ CH ₂ OMe, -OCH ₂ CH ₂ OEt, -OCH ₂ CH ₂ NH ₂ , -OCH ₂ CH ₂ NHMe, -OCH ₂ CH ₂ NMe ₂ , -NHCH ₂ CH ₂ OMe, -SCH ₂ CH ₂ OMe, -SO ₂ CH ₂ CH ₂ OMe, -OCH ₂ CH ₂ SO ₂ Me, -NHCH ₂ CH ₂ NHMe, -NHCH ₂ CH ₂ NMe ₂ , -N(CH ₂ CH ₂ OH) ₂ , -N(CH ₂ CH ₂ OMe) ₂ , -NHCH ₂ CO ₂ H, -NHCH ₂ CO ₂ Et, -NHCH ₂ CO ₂ Et, -NHCH ₂ CONH ₂ , -NHCH ₂ CONMe ₂ , -NHCH ₂ CONHMe, -N(CH ₃)CH ₂ CO ₂ H, -N(CH ₃)CH ₂ CO ₂ Et, -(NMe)CH ₂ COOH, -N(Me)CH ₂ CONH ₂ , -N(Me)CH ₂ CH ₂ NMe ₂ , -N(Me)CH ₂ CH ₂ OMe, -NHCH ₂ CH ₂ OMe,
15	
20	



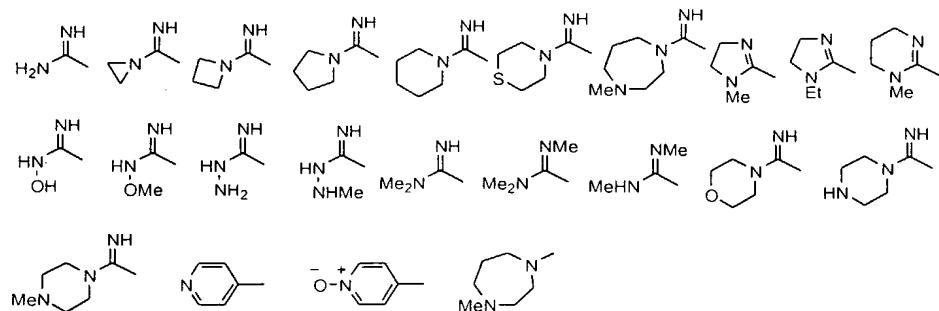
and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

The invention provides compound of formula Ib, as described above, having
5 the following structure:



wherein:

A-Q is a member selected from the group consisting of:



5

R^{1a} is a member selected from the group consisting of:

H, -F;

R^{1e} is a member selected from the group consisting of:

-Cl, -Br;

10 R^{1d3} is a member selected from the group consisting of:

H, F, Cl, Br, -OCH₃, -OCF₃, -OCH₂F, -OCHF₂, -OCH₂CF₃, -OCF₂CF₃;

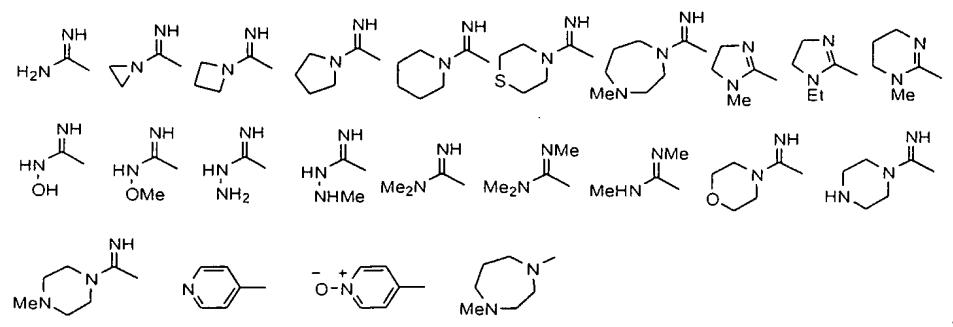
and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

15 The invention provides compound of formula Ib, as described above, having the following structure:



wherein:

A-Q is a member selected from the group consisting of:



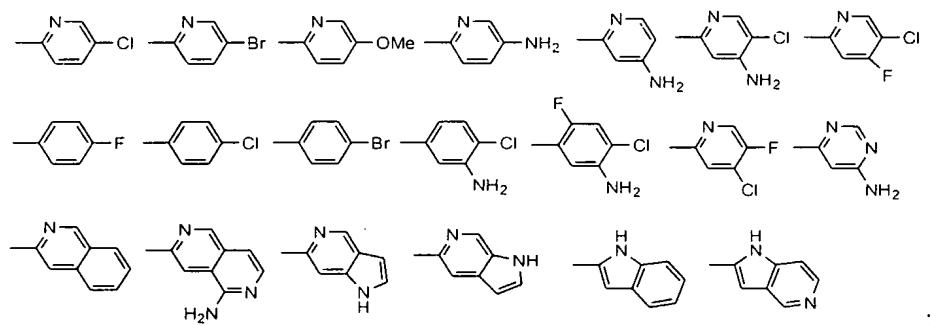
R^{1a} is a member selected from the group consisting of:

H, -F;

5 R^{1d3} is a member selected from the group consisting of:

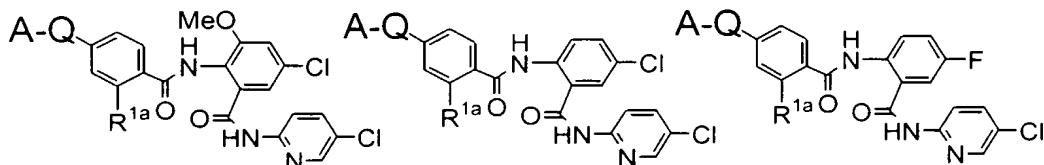
H, -F, -Cl, -Br, -OCH₃, -OCF₃, -OCH₂F, -OCHF₂, -OCH₂CF₃, -OCF₂CF₃, -NHSO₂Me, -NHAc, -SO₂Me, -SO₂NH₂;

X is a member selected from the group consisting of:



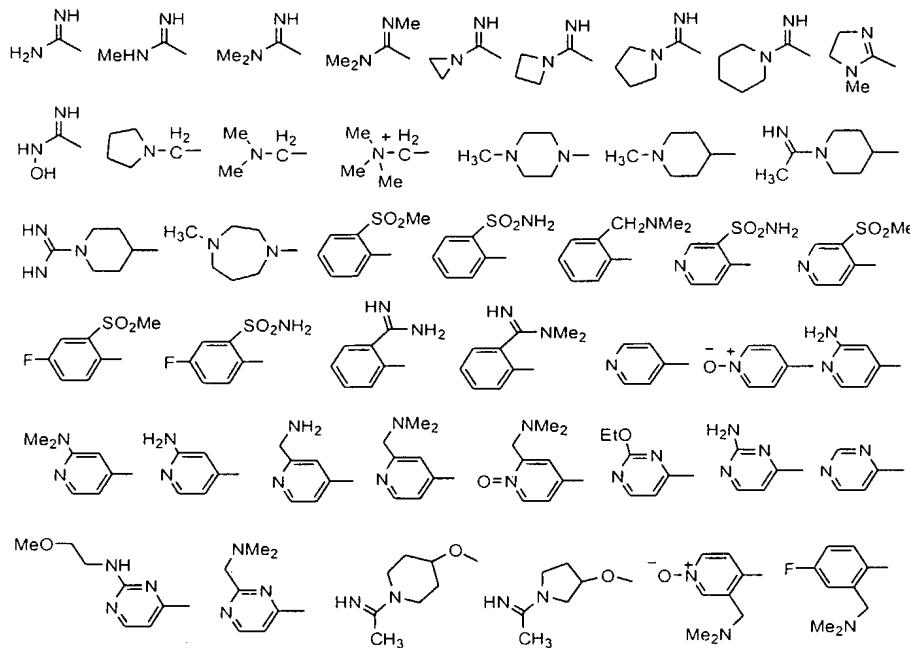
10 and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

The invention provides compound of formula Ib, as described above, having the following structure:



wherein:

A-Q is a member selected from the group consisting of:



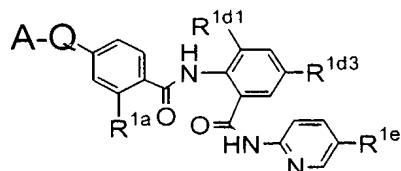
; and

R^{1a} is a member selected from the group consisting of:

5 H, -F;

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

The invention provides compound of formula Ib, as described above, having
10 the following structure:



wherein:

R^{1a} is a member selected from the group consisting of:

H, -F;

15 R^{1d1} is a member selected from the group consisting of:

H, -OMe;

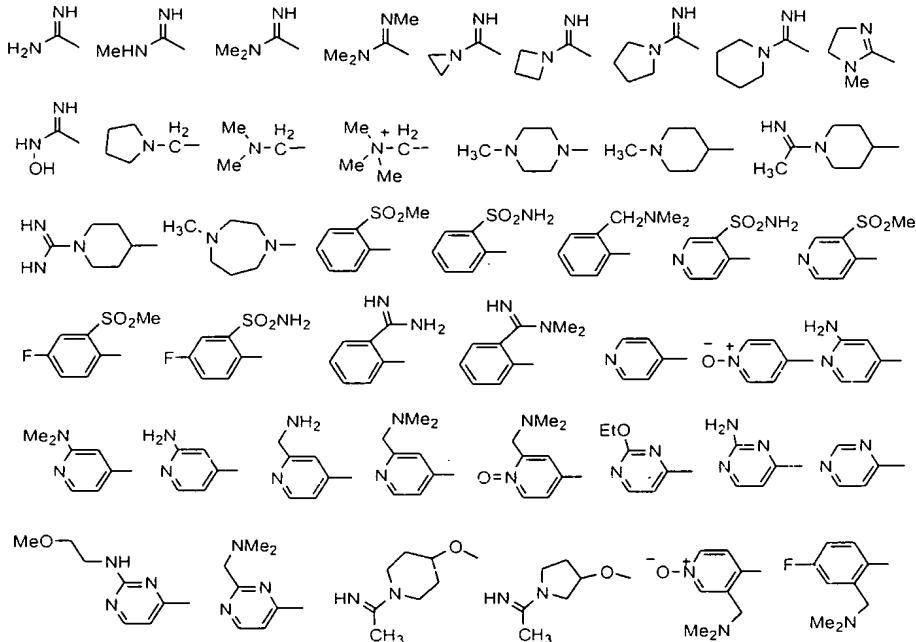
R^{1d3} is a member selected from the group consisting of:

H, -F, -Cl, -Br, -OMe, -OCF₃;

R^{1e} is a member selected from the group consisting of:

H, -F, -Cl, -Br;

5 A-Q is a member selected from the group consisting of:



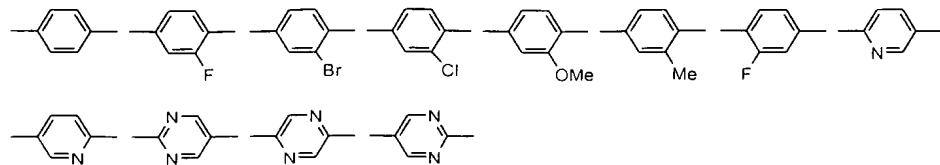
and all pharmaceutically acceptable isomers, salts, hydrates and solvates and prodrug derivatives thereof.

10 The invention provides compound of formula Ib, as described above, having the following structure:



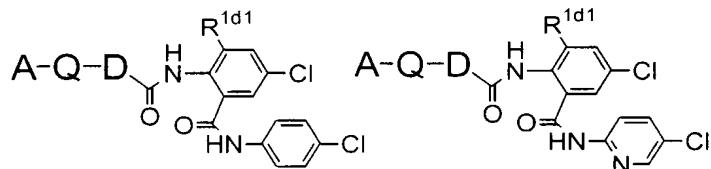
wherein:

D is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates and solvates and prodrug derivatives thereof.

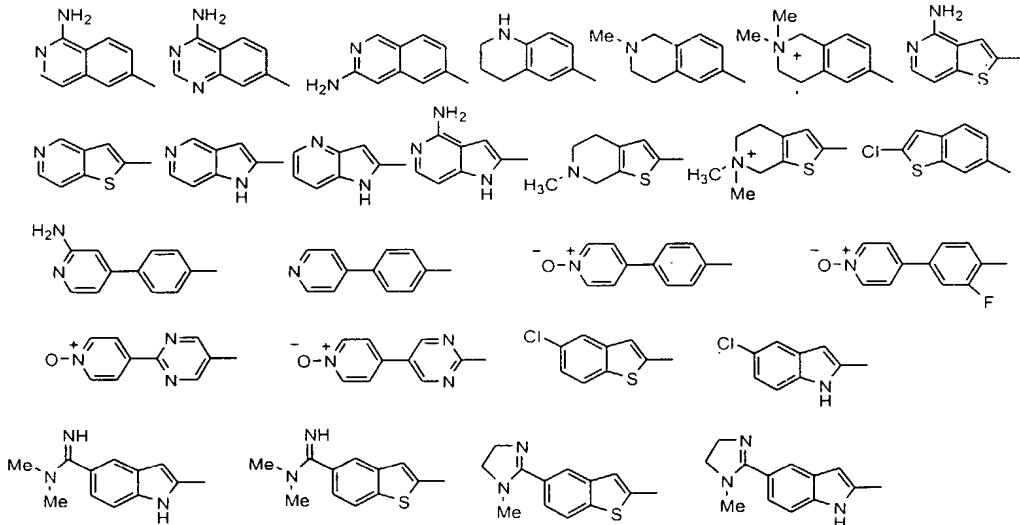
5 The invention provides compound of formula Ib, as described above, having the following structure:



wherein:

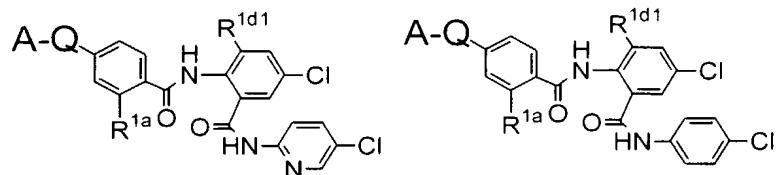
R^{1d1} is H or $-OMe$;

10 A-Q-D is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

The invention provides compound of formula Ib, as described above, having the following structure:

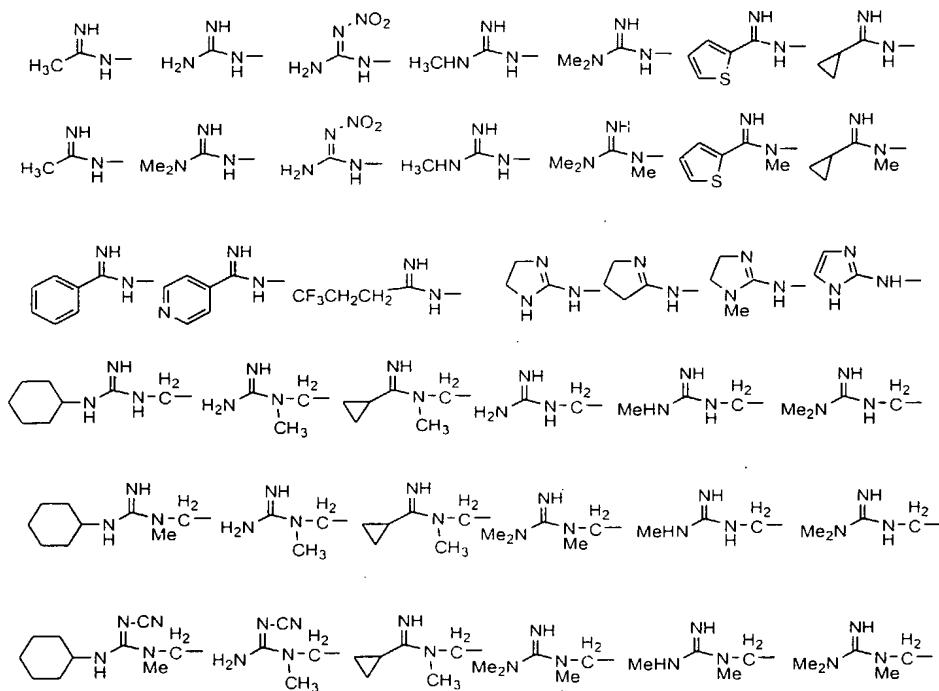


5 wherein:

R^{1a} is H or F;

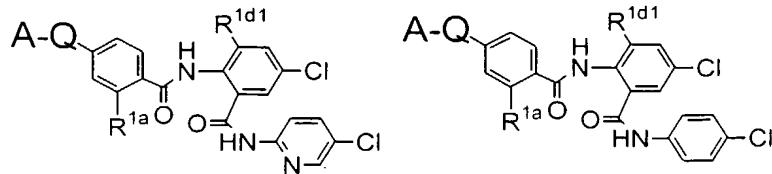
R^{1d1} is H or -OMe;

A-Q is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

15 The invention provides compound of formula Ib, as described above, having the following structure:

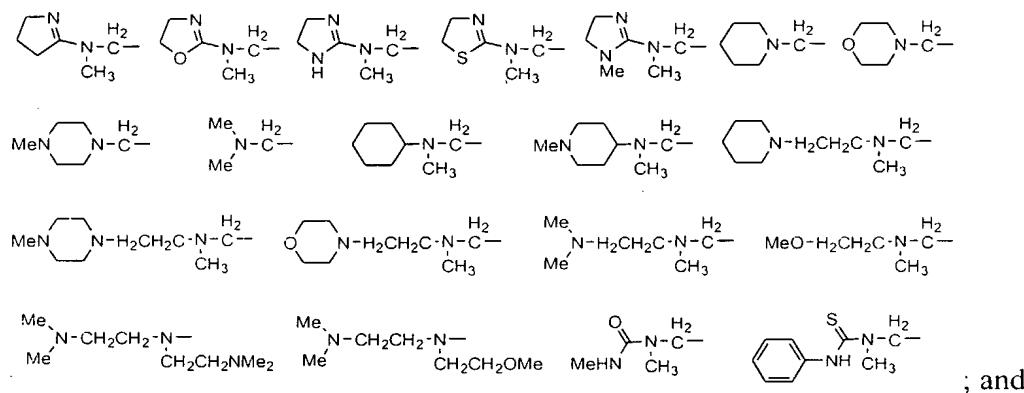


wherein:

R^{1a} is H or F;

R^{1d1} is H or $-OMe$;

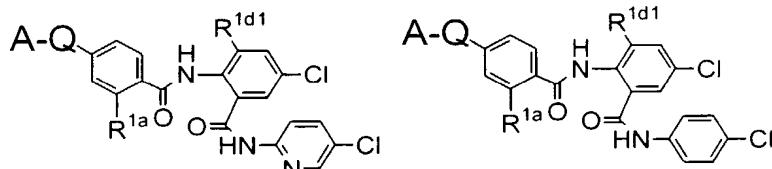
5 A-Q is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates and prodrug

10 derivatives thereof.

The invention provides compound of formula Ib, as described above, having the following structure:

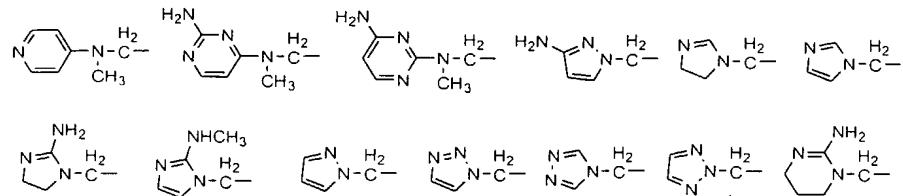


wherein:

R^{1a} is H or F;

R^{1d1} is H or $-OMe$; and

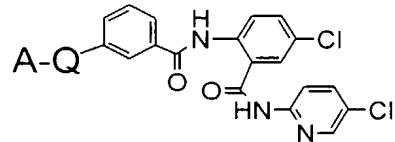
A-Q is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

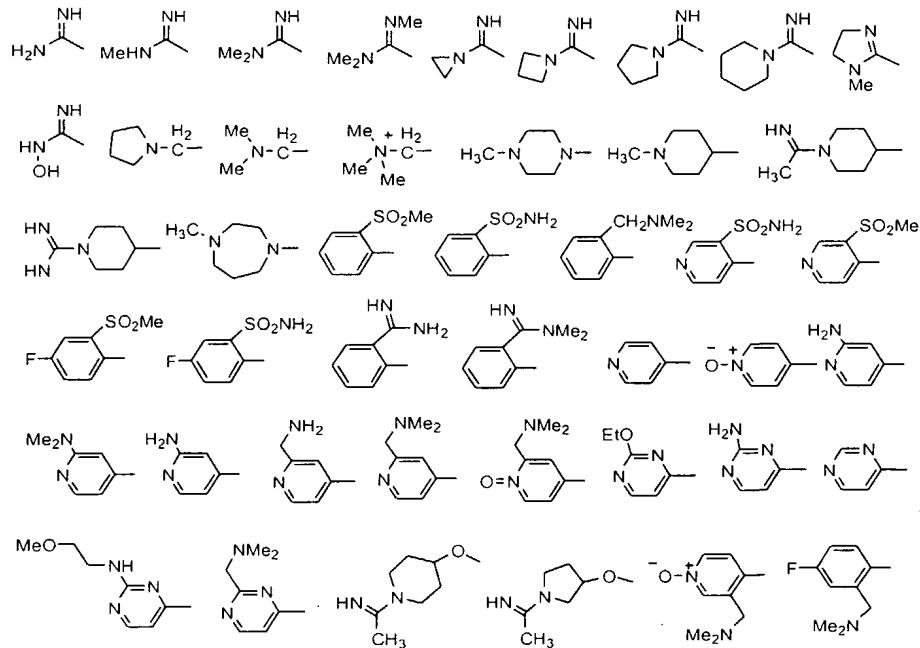
5

The invention provides compound of formula Ib, as described above, having the following structure:



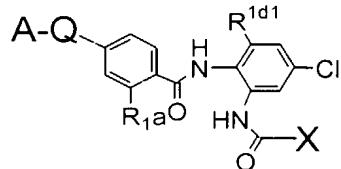
wherein:

10 A-Q is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

The invention provides compound of formula Ib, as described above, having
5 the following structure:

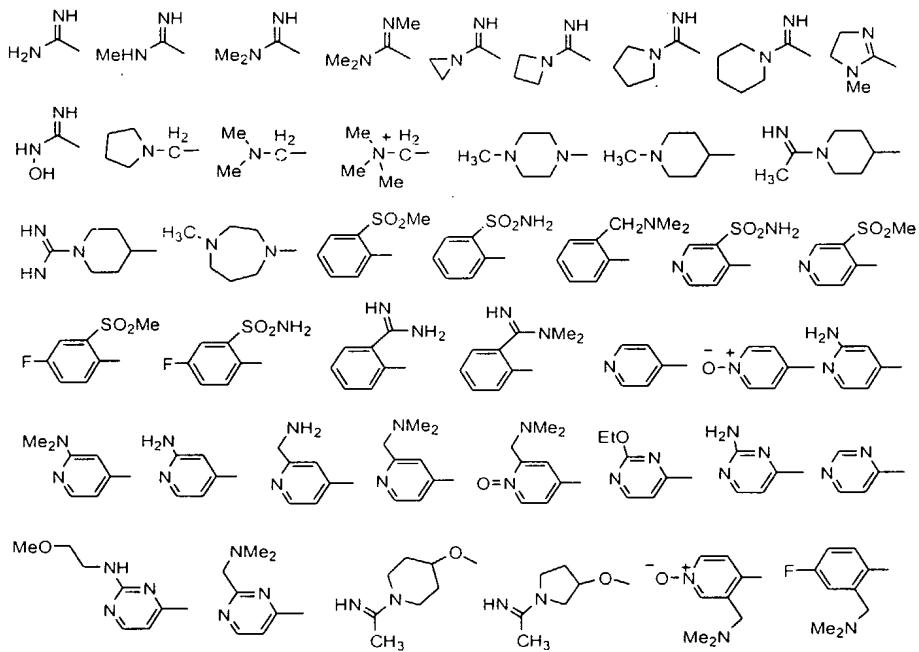


wherein:

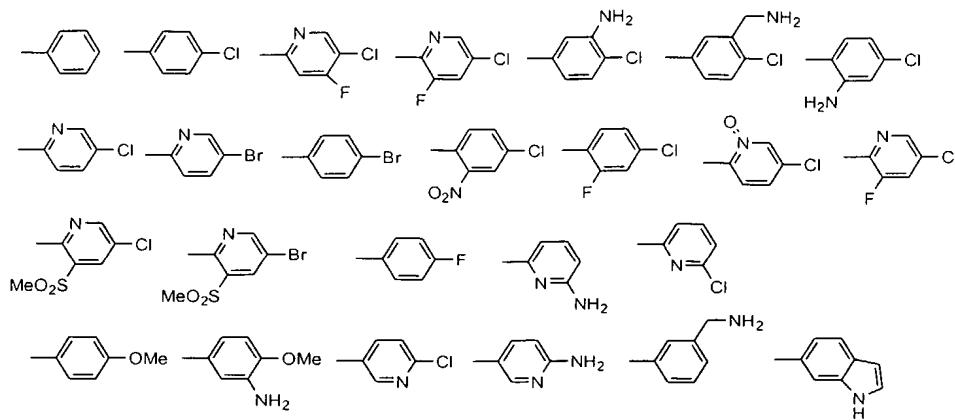
R^{1a} is H or F;

R^{1d1} is H or -OMe;

10 A-Q is a member selected from the group consisting of:

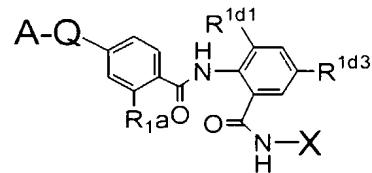


and X is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates and prodrug derivatives thereof.

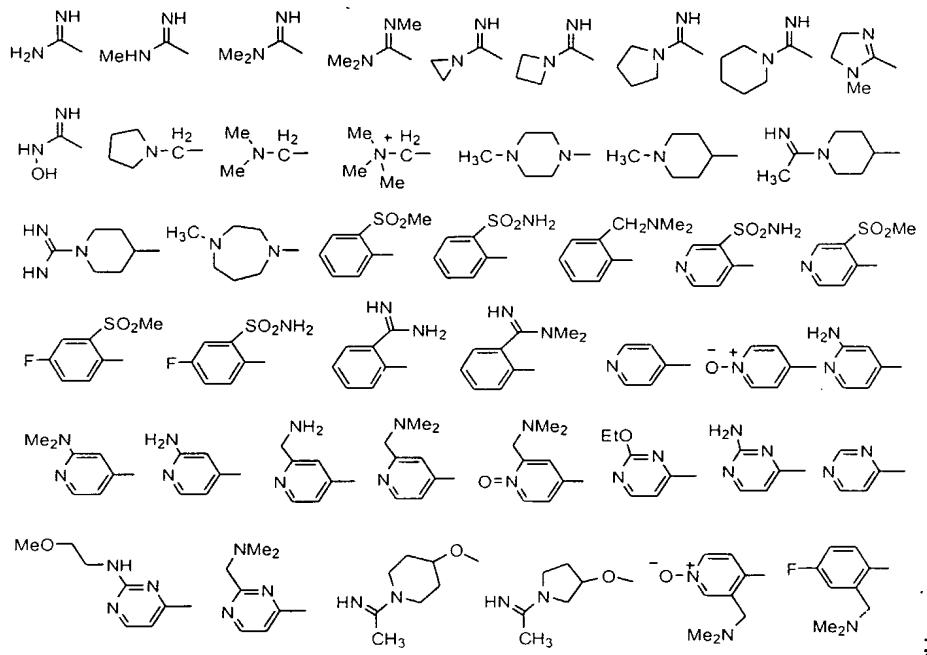
5 The invention provides compound of formula Ib, as describe above, having the following structure:



wherein:

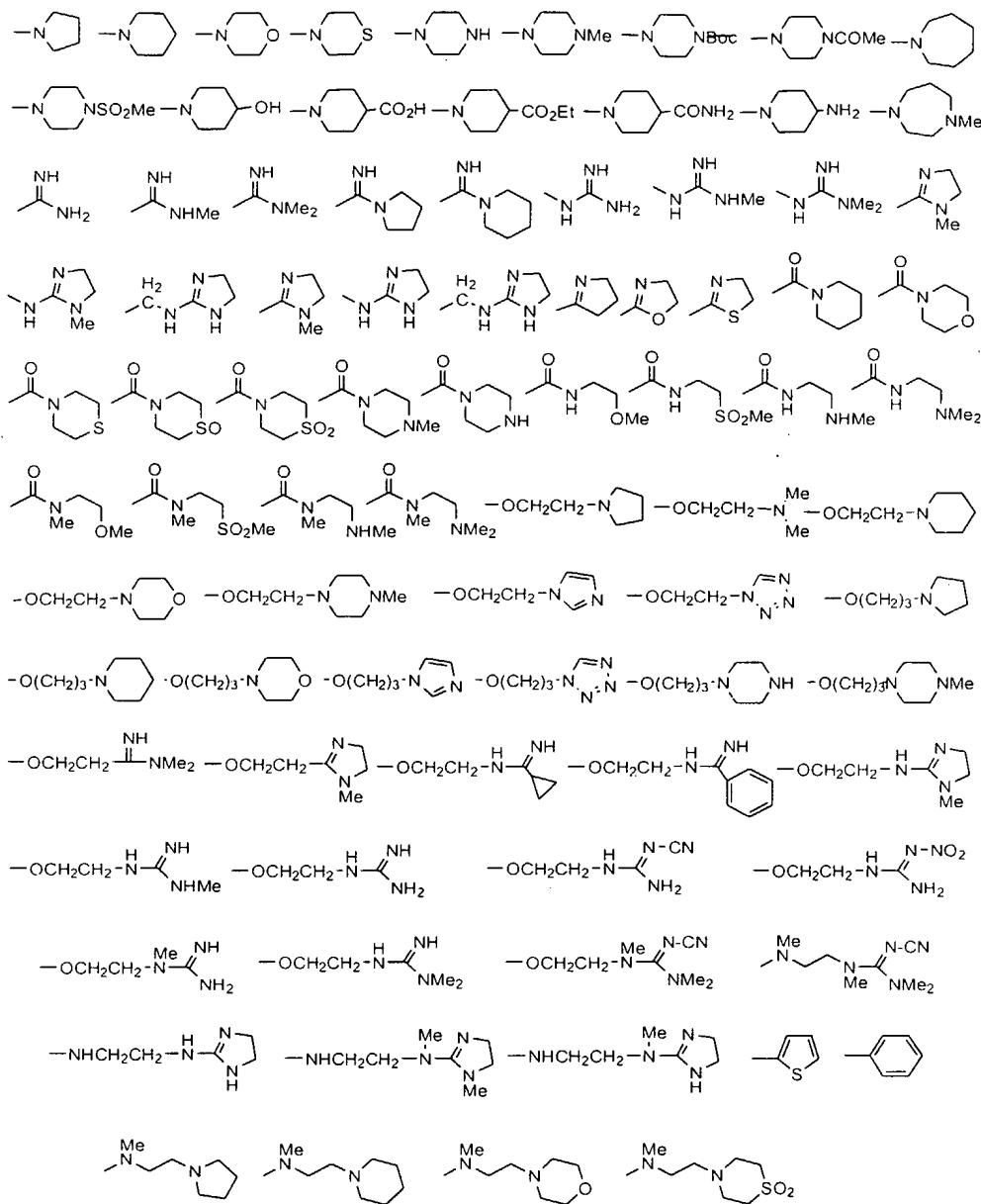
R1a is H or F;

10 A-Q is a member selected from the group consisting of:



R^{1d} is a member selected from the group consisting of:

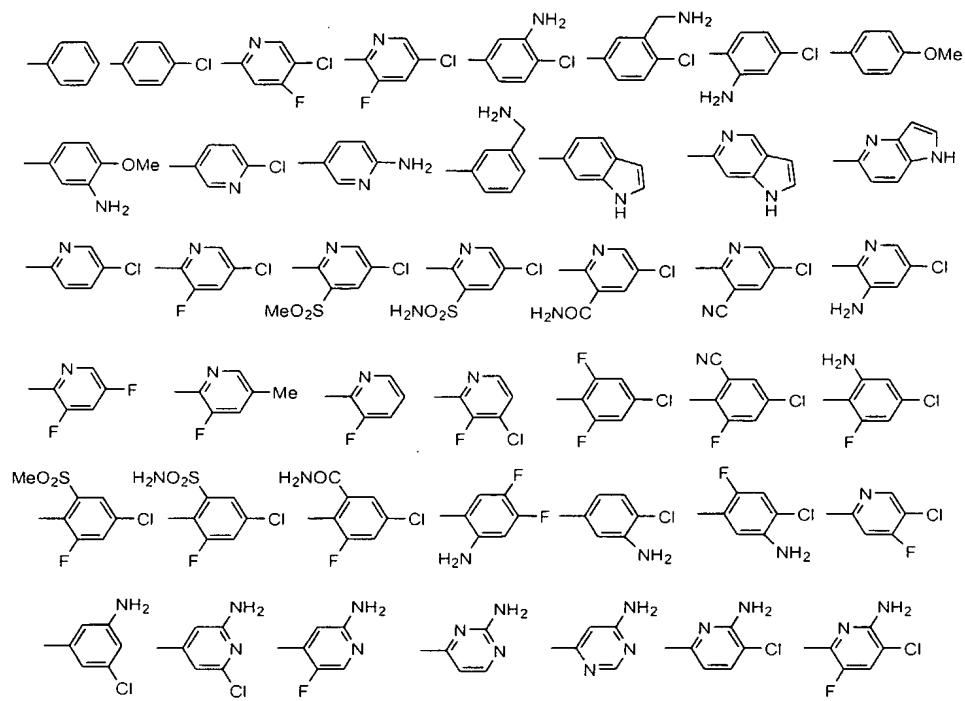
5 H, -F, -Cl, -Br, aryl, heteroaryl, -NH₂, -NMe₂, -NHMe, -NHSO₂Me,
 -NHCOMe, -CH₃, -CF₃, -OH, -OCH₃, -SCH₃, -OCF₃, -OCH₂F, -OCHF₂, -
 OCH₂CF₃, -OCF₂CF₃, -NO₂, -CN, -CO₂H, -CO₂Me, -CO₂Et, -CONH₂,
 -CONHMe, -CONMe₂, -SO₂NH₂, -SO₂CH₃, -SO₂NMe₂, -CH₂OH, -CH₂NH₂,
 -CH₂NHMe, -CH₂NMe₂, -OCH₂CO₂H, -OCH₂CO₂Me, -OCH₂CO₂Et,
 -OCH₂CONH₂, -OCH₂CONMe₂, -OCH₂CONHMe, -OCH₂CH₂OMe,
 10 -OCH₂CH₂OEt, -OCH₂CH₂NH₂, -OCH₂CH₂NHMe, -OCH₂CH₂NMe₂,
 -NHCH₂CH₂OMe, -SCH₂CH₂OMe, -SO₂CH₂CH₂OMe, -OCH₂CH₂SO₂Me,
 -NHCH₂CH₂NHMe, -NHCH₂CH₂NMe₂, -N(CH₂CH₂OH)₂, -
 N(CH₂CH₂OMe)₂, -NHCH₂CO₂H, -NHCH₂CO₂Et, -NHCH₂CO₂Et,
 -NHCH₂CONH₂, -NHCH₂CONMe₂, -NHCH₂CONHMe, -N(CH₃)CH₂CO₂H,
 15 -N(CH₃)CH₂CO₂Et, -(NMe)CH₂COOH, -N(Me)CH₂CONH₂, -
 N(Me)CH₂CH₂NMe₂, -N(Me)CH₂CH₂OMe, -NHCH₂CH₂OMe,



R^{1d3} is a member selected from the group consisting of:

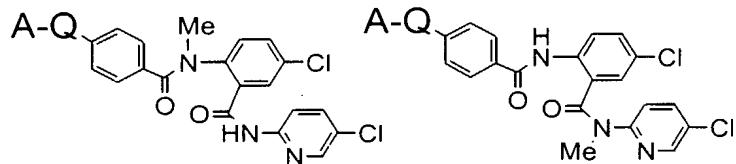
H, -F, -Cl, -Br, -OCH₃, -OCF₃, -OCH₂F, -OCHF₂, -OCH₂CF₃, -OCF₂CF₃; and

5 X is a member selected from the group consisting of:



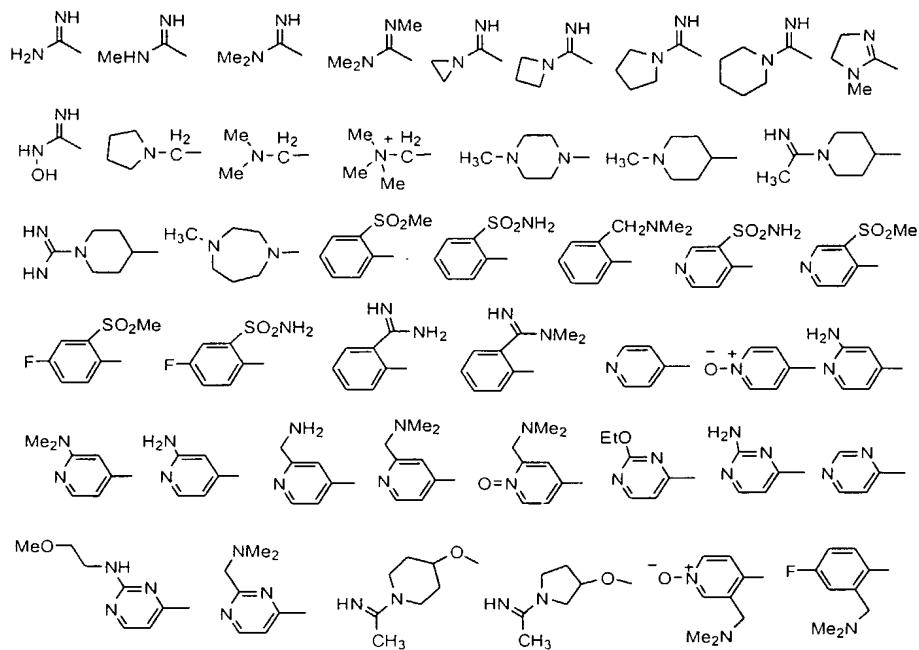
and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

5 The invention provides compound of formula Ib, as described above, having the following structure:



wherein:

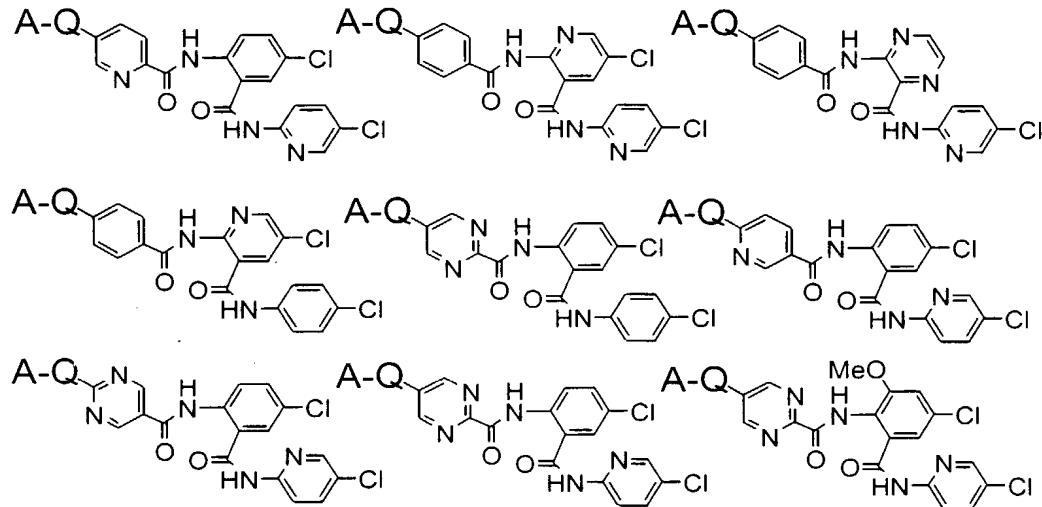
10 A-Q is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

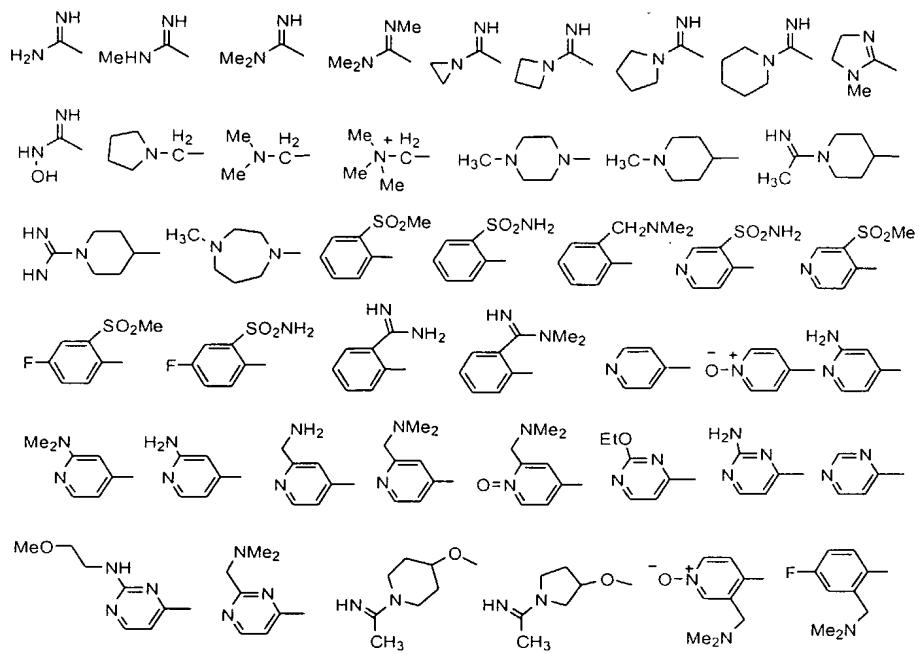
5

The invention provides compound of formula Ib, as described above, having the following structure:



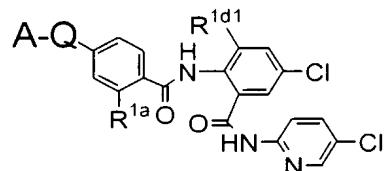
wherein:

A-Q is a member selected from the group consisting of:



and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

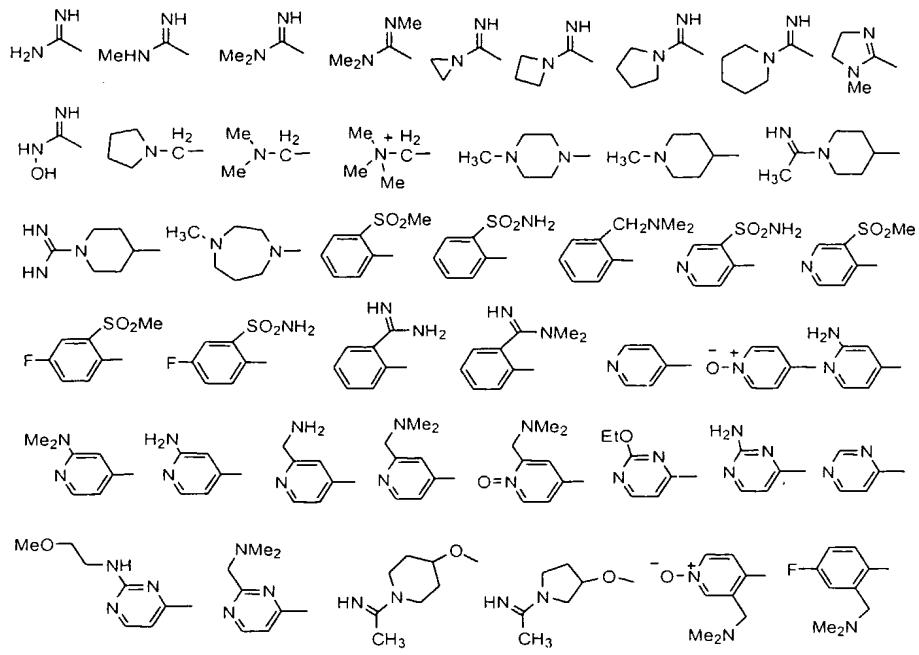
5 The invention provides compound of formula Ib, as described above, having the following structure:



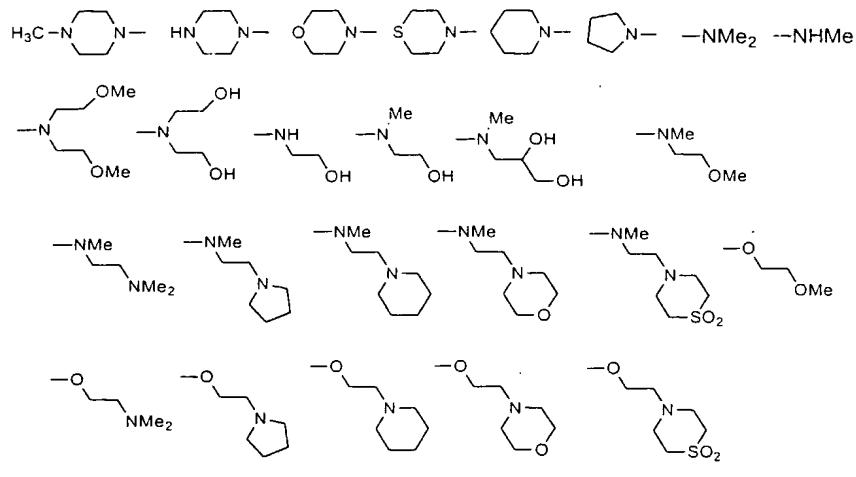
wherein:

R^{1a} is H or F;

10 A-Q is a member selected from the group consisting of:



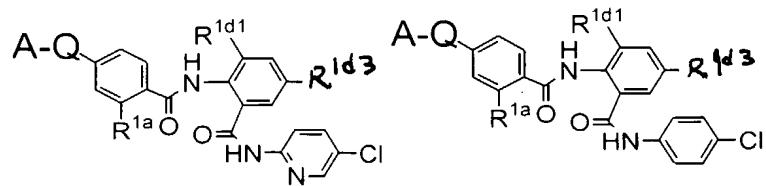
R^{1d1} is a member selected from the group consisting of: H, OMe, Cl, F, OCF_3 ,



- $N(Me)COOEt$, - $N(Me)CH_2OOH$,

5 and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

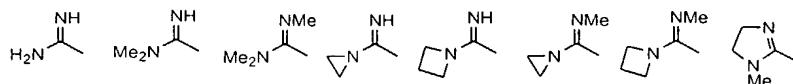
The invention provides compound of formula Ib, as described above, having the following structure:



wherein:

R1a is H or F;

A-Q is a member selected from the group consisting of:



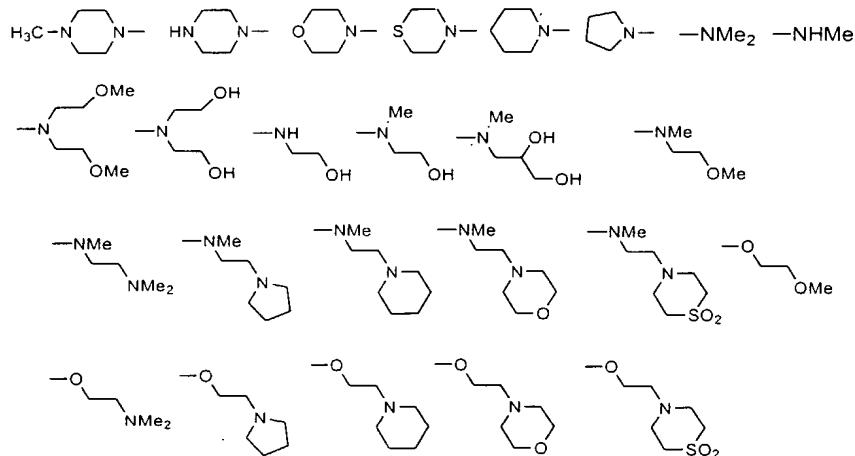
5

R^{1d1} is a member selected from the group consisting of:

H, -F, -Cl, -Br, -OMe, -OCF₃, -OH, -NMe₂, -OCH₂CO₂Et, -OCH₂CO₂H;

R^{1d3} is a member selected from the group consisting of:

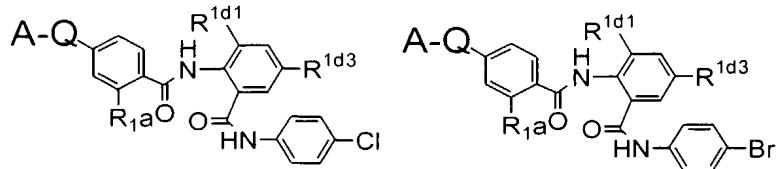
10 H, -F, -Cl, -Br, -OMe, -OCF₃, -OH, -NMe₂, -OCH₂CO₂Et, -OCH₂CO₂H, -OCF₂H, -OCFH₂, -OCF₂CF₃, -OCH₂CH₃,



-N(Me)COOEt, -N(Me)CH₂OOH

and all pharmaceutically acceptable isomers, salts, hydrates, solvates and prodrug derivatives thereof.

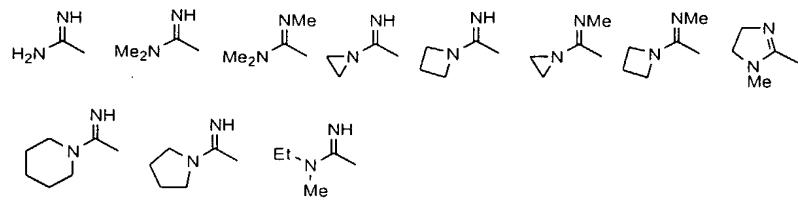
The invention provides compound of formula Ib, as described above, having the following structure:



wherein:

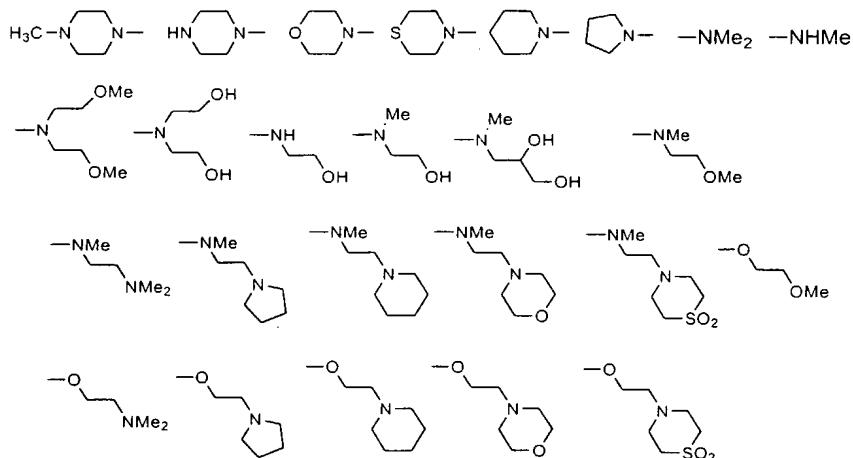
5 R1a is H or F;

A-Q is a member selected from the group consisting of:



R^{1d1} is a member selected from the group consisting of:

H, -F, -Cl, -Br, -OMe, -OCF₃, -OH, -NMe₂, -OCH₂CO₂Et, -OCH₂CO₂H



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-N(Me)COOEt, -N(Me)CH₂OOH

R^{1d3} is a member selected from the group consisting of:

H, -F, -Cl, -Br, -OMe, -OCF₃, -OH, -NMe₂, -OCH₂CO₂Et, -OCH₂CO₂H, -OCF₂H, -OCFH₂, -OCF₂CF₃, -OCH₂CH₃.